ELECTRICAL REVIEW

THE OLDEST ELECTRICAL PAPER — ESTABLISHED 1872

Vol. CXLII. No. 3671 2nd APRIL, 1948 9d. WEEKLY

Nationalization

B.E.A. and the Electrical Industry

YESTERDAY (Thursday) a silent revolution occurred in Great Britain: the vital electricity supply of the country became what is probably the largest State-owned undertaking of its kind in the world. The revolution was somewhat less drastic than it might have been by virtue of the fact that the industry was already owned by the public to a very large extent.

It is perhaps this feature of the change-over that may cause some regret. The individual municipal supply undertakings (and the companies no less) have been able to establish an intimacy with their consumers which some fear may be endangered by national ownership. As a matter of fact apprehensions have been very much allayed by the nature of the appointments which are being made by the British Electricity Authority and Area Boards. It is found that largely the change is nominal, the same men being in charge of the same districts, so that at least a temporary continuity of policy is ensured.

Better and Cheaper Service?

The public will be wondering whether they are to expect a better and cheaper service. In some cases (but by no means generally) there is room for improvement in both respects. Some consumers may secure better treatment but in present conditions we doubt whether many of them will get cheaper electricity. The levelling of prices which is the eventual aim of the new organization will most probably result in the "robbing" of urban Peter to pay rural Paul.

These are simple and more immediate considerations; there are others which closely concern other branches of the electrical industry. First, the electrical contractors look towards an uncertain future. They have already experienced the competition of some electricity supply authorities who were able to carry out installation work at very low prices knowing that they would be recompensed by their profit on electricity. Other undertakings have been content to leave the work to local contractors and where the contractors have been competent and helpful, neither consumer nor authority has had any regrets. What will be the attitude of the Area Boards in this connection?

Manufacturers' Apprehensions

Going further, there is the threat to manufacturers latent in Section 2 (Subsections 3 and 4) of the 1947 Act. It would not be so simple for the Authority and Boards to embark upon the manufacture of equipment as it would be for them to set up installation departments and to sell appliances. All the same, the threat is there and could conceivably be used to compel manufacturers to cut their prices to below reasonable levels. In this case the possible ill effects would not be confined to this country; to keep going, the manufacturers would be compelled to seek compensation from the export trade. But already British prices are considered to be high enough and any rise would prevent our competing in overseas markets.

We are sure that the British Electricity Authority, which is soundly led and

manned, will give the fullest consideration to these and other matters in which its activities must be related to the electrical industry and the national economy as a whole. Having expressed these thoughts we wish the Authority and Boards every success in their immense task.

Bulk Tariffs

BY the interim tariff quoted on page 522, the British Electricity Authority has, in effect, adjusted the bulk supply charges of the Central Electricity Board to meet the new conditions and gained breathing space to determine a future tariff policy. Its terms provide that the amounts payable by each Area Board shall be approximately equal to those which would be paid in the aggregate by the former individual undertakings in the Area. Fuel charges vary from area to area in accordance with the price of coal. It is most important that this differentiation should be allowed for in the ultimate tariff, otherwise the tariff would prove a grave handicap to public electricity supplies to industry as favouring the installation of private generating plants in cheap coal districts.

B.E.A. GUIDE

Our provisional guide to the new electricity organization is now available. It contains a brief explanation of the system and particulars of the personnel of the Central Authority and Area Boards. Copies are obtainable at 2s. each (postage 2d.) from booksellers or from the* Electrical Review, *Dorset House, Stamford Street, S.E.1

Paper Salvage

WHILE everybody knows that the salvage of waste paper is essential, it is necessary occasionally to spur them to take active steps in the matter. We therefore again appeal to readers to organize a regular clean-up of their factories, offices, shops and homes, and thus ensure that unwanted paper is handed over to the collectors—public authority or private. Industrial establishments should have at least one man or woman with the particular care of this business. It is desirable to add that discretion should be employed in the scrapping of books and documents.

Plant Availability

ALTHOUGH the apparently greater proneness to breakdown of more efficient power station plant, as revealed in Mr. A. R. Cooper's recent I.E.E. paper is disquieting, past experience encourages the view that this represents a temporary phase only and is part of the price of progress. There is, we believe, no substantial ground for doubting the correctness of the trend towards elevated steam conditions with large capacity high speed single shaft turbo-alternators. A further point related to design is that generating units carrying the base load to-day will be relegated to peak-load duties a few years hence with all that implies in the way of intermittent operation.

Price Reductions

FOLLOWING up the recent decision of the Electric Lamp Manufacturers' Association to reduce the prices of a number of the lamps made by members there now comes an announcement by the Electric Water Heater Manufacturers' Association of a cut in the prices of its members' products as from 1st April. This is a consequence of the recommendations made by the Federation of British Industries to assist the Chancellor of the Exchequer in his anti-inflation drive. The F.B.I. also includes in a list of goods the prices of which are to be held at present levels "electrical and general engineering components."

Coal Prices

THE statement by Mr. Alfred Robens, Parliamentary Secretary, Ministry of Fuel, that coal prices will be graded according to quality is of the first importance to the electricity supply industry, which is by far the biggest user of low-grade coal. A beginning should be made by taking calorific value as a criterion. That will not be enough to secure equity, however, or to encourage active development of means for burning the kinds of fuel that are unsuitable for other industries. Prices quoted for power stations should also make allowance for greater expenditure on furnaces, and equipment required for the combustion of such coal and the losses entailed in operation, as recently discussed in these columns.

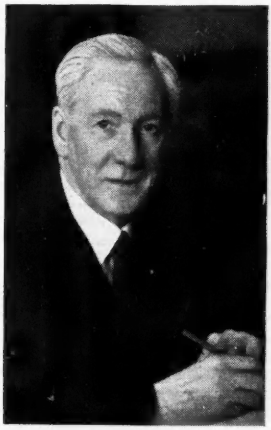
Vesting Day

Message from Lord Citrine

We have pleasure in reproducing below a message sent to the Electrical Review *by the Rt. Hon. Lord Citrine, chairman of the British Electricity Authority*

DURING my lifelong membership of the Electrical Trades Union, I have been a frequent reader of your journal, and I know something of the wide circulation secured to views expressed in its pages. Gladly, then, I send the message to your readers that you invite.

At the present time all sections of the electrical industry are facing what is to some extent an unsignposted future. The new orientation of the supply side is, of course, broadly charted by the Electricity Act of 1947, but many are probably wondering what will be the ultimate consequences of the new legislation for other important branches, such as manufacturing, contracting and retailing and the great export trade that the electrical industry as a whole supports. Frankly, I cannot say that the changes now proceeding in respect of electricity supply will leave all other sections of the industry completely unaffected. Indeed that is improbable, but I personally do not know, nor does anyone else, precisely what the future holds. This, however, I can say once again with emphasis: the British Electricity Authority is not a sinister, fourteen-tentacled octopus seeking to grasp and draw to itself everything within reach. On the contrary, in pursuit of the objective of a still better and more universal electricity supply service, the Central Authority are more than anxious to work in close harmony with every interest contributing to the same end.



Lord Citrine

As an earnest of their desire and intention various specific guarantees have been given publicly, securing the immediate future of certain electrical organizations, such as, for example, the Electrical Research Association, the Electrical Development Association and the Annual Convention of the I.M.E.A. Rightly understood, these acts spotlight B.E.A. policy which, while it shuns premature irrevocable commitments as unwise, at the same time seeks to preserve the *status quo* wherever practicable, until every aspect of each problem, and all the consequences of any projected change, have been thoroughly probed and judicially considered in consultation with all interests concerned. This is not a weak but a strong policy, from which no group in the electrical industry that has a legitimate and worthwhile contribution to make to the maintenance and betterment of British Electricity service has anything to fear.

Yours sincerely,
(Signed) **CITRINE**
Chairman,
British Electricity Authority.

Farewell Gatherings

MANY organizations came to an end with the vesting of the electricity supply undertakings in the British Electricity Authority. Municipal electricity committees, who have done much good, unpaid, work lost their reason for existence and are either being disbanded or transformed. During the past week or two the great electricity supply companies to whom much of the electrical development of the country has been due have been holding their final meetings.

The Central Electricity Board has held its last meeting and last week Sir John Kennedy said farewell to the staff of the Electricity Commission. On Wednesday the Provincial Electric Supply Association and the London & Home Counties J.E.A. held concurrent good-bye luncheons and the Incorporated Municipal Electrical Association is in voluntary liquidation.

To the members of all these and the other bodies which now disappear from the scene we express the thanks of the industry and we wish them success in their new ventures or happiness in their retirement.

Commissioners' Party

SIR JOHN KENNEDY, chairman of the Electricity Commission, and Lady Kennedy entertained the staff of the Commission at a party held at the Bush House Restaurant, London, W.C.2, on 24th March. The programme included a reception by Sir John and

Sir John and Lady Kennedy receiving the guests

Lady Kennedy, dancing, a lively entertainment by "Kenneth and George" and a buffet supper.

During an interval Mr. A. E. Marson, secretary of the Commission, proposed a vote of thanks to Sir John and Lady Kennedy for their hospitality and to those who had carried out the arrangements. In a reference to the work of the Commission since 1920 Mr. Marson said it was a melancholy thing to see such a good body disbanded. The work had to go on, however, and the staff of the Commission would help to continue it with their experience and ability. It had been a great pleasure to work with the Commissioners; he refused to believe that their services would be lost to the electricity supply industry.

Sir John Kennedy replied in a cheerful vein and mentioned that he had heard from the former Commissioners and Mr. R. T. G. French, the late secretary, regretting their inability to be present. He thanked Mr. Jenkins and his associates for the success of the party.

Mr. C. C. Morley New (Commissioner) also thanked the staff for their service and co-operation and wished them future happiness and success.

London J.E.A. Luncheon

ON Wednesday last the London and Home Counties Joint Electricity Authority held its final meeting followed by a luncheon at the Savoy Hotel, London. At the luncheon there was a gathering of about ninety including many past and present members and officers of the Authority and other distinguished men in the industry.

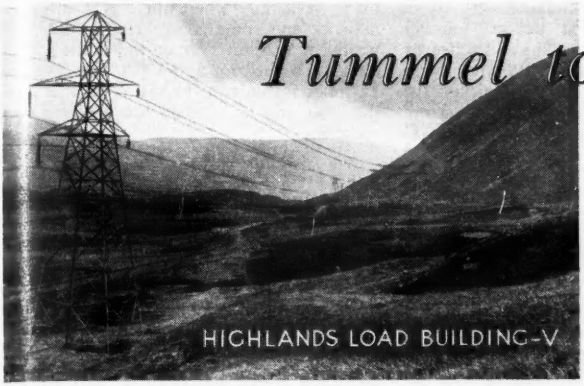
A souvenir brochure was produced for the occasion containing a brief history of the Authority, from its establishment in 1925 to the present day, with portraits of the men who were responsible for its success and photographic reproductions of its various establishments. It was interesting to see at the head of the list of the founder members of the Authority the name of Mr. Attlee, the present Prime Minister.

South Wales Social

STAFFS of the 43 electricity undertakings merging into the South Wales Electricity Board held a very enjoyable "Eve of Vesting Date" dance and social evening on 23rd March at the Assembly Rooms, City Hall, Cardiff. Among the five hundred or so persons who were present were the Deputy Lord Mayor of Cardiff (Councillor Dr. J. Walker); members of the South Wales Electricity Board, including Mr. Edward Jones (deputy chairman), Principal James, Aldermen Thomas Evans and B. Curran; Mr. J. W. G. Bird, chief engineer to the Board; and Mr. J. F. Smith, chief commercial officer. An excellent cabaret show was given by the South Wales Power Company's talented troupe of dancers, "The Adorables," and winners of spot and other novelties received prizes of electrical apparatus.

At the Commissioners' table; the party includes Sir John Kennedy, Mr. C. G. Morley New and Mr. H. Nimmo and their ladies

Tummel to Elgin



AS we leave Tummel, travelling due east, after an intensely interesting inspection of the hydro-electric workings described in the *Electrical Review* of 19th March, we see on the hillside on our left as we travel with Loch Tummel down on our right the H-pole double-circuit 33-kV line from Tummel to Forfar. The red and yellow bands on the opposite members of the H-structures remind us of the safety working scheme for the linesmen. A linesman carries a colour corresponding to that on the pole members carrying the line on which he is working and on to which he hooks his earth stick. A further colour scheme relates to the line longitudinally from and to the section switches. A linesman wearing a colour which indicates the east side of a section switch is constantly warned not to work on the west side of the switch which is represented by another colour.

Immediately past Loch Tummel we take a look back at the eagerly awaited Queen's View. At a point just before we reach the famous Pass of Killiecrankie we turn sharp left where the Forfar line is tapped for an 11-kV line up the rising ground to a quarry near Blair Atholl. There is auto-reclose switchgear on this line, and this industrial development has made it possible to open up the Strathgarry-Blair Atholl district for a general supply. The line is of the light rural construction type, except that the spans have been shortened to about 70 yd (64 m) because of the altitude. Our purpose in this diversion, however, is to see the church, manse and cottages at the tiny village of Tenandry which has a supply from a 15-kVA pole transformer protected by simple fuse links designed by the Grampian engineers.

From this higher ground we have a view of the Killiecrankie Pass and can just discern the masts of this noteworthy overhead line crossing going up over the hills towards the Highland railway in the distance. The crossing is, of course, part of the 33-kV Forfar line, but the construction is changed to steel tower. There are five towers 95 ft (29 m) high, and the actual river crossing involves a span of 1,373 ft (419 m). The river in the deep ravine is 200 or 300 ft (61-92 m) below the towers. We now retreat back to the Tummel-Killiecrankie road and continue east before turning north near the Pass, all set for our long journey north.

We soon have to stop, however, to see the Shierglas Quarry where there is a maximum demand of 250 kVA and a consumption of 226,000 kWh per year associated with the production of agricultural limestone, which is ground but not burnt. Just before we reach Blair Atholl we see the extremely pretty little hamlet of Aldclune where a 440/250-V line takes a supply to a few crofters' cottages from the 11-kV quarry line, but for which it is unlikely that the hamlet could be enjoying its supply. The 11-kV line will be extended past Blair Atholl to a Hydro-Electric Board camp near which we see the site of a wartime forestry camp. On our way to Calvine, 10 miles (16 km) north-west of Killiecrankie, to which the quarry line will also eventually be extended, we pass the Falls of Bruar on our right. Now we rise up to 1,500 ft (458 m) fairly rapidly and soon meet the 132-kV and 33-kV line at Dalnacardochr, unning north from Tummel, which we are to follow fairly closely for many miles.

A surprise at this point is to see the 33-kV line tapped for a supply mainly to the shooting lodge and a few houses. We get a glimpse of Loch Garry on our left, and as we continue to rise things begin to look a

little grim. The double-circuit line is still in view, and at Dalnaspial we see another 50-kVA tapping for this village and a nearby Post Office repeater station. We are now in Inverness-shire, and at the summit of the railway line running north (1,520 ft—464 m).

At Dalwhinnie we turn in to see the north-east end of Loch Ericht and the floating weir we have already referred to. Another tapping of the 33-kV line here provides a 300-kVA supply to a local distillery and Laggan, as well as Dalwhinnie village for which there is a 440/250-V network fed from a tertiary winding on the 300-kVA transformer.

The country gets wilder and we continue to obtain extraordinary background views to the 132-kV and 33-kV line running north. Our arrival at Crubenmore, 20 miles (16·1 km) or so practically due north of Tummel, calls for a halt to see the quarry and workings for the production of road metal. A maximum demand of 107 kW results from the processes of crushing, granulating, drying, screening, conveying, pumping, air compressing and tar heating, involving the use of 173 h.p. of motors and two 36-kW banks of boiler immersion heaters, for the production of 90 tons of road material per day. The supply to the quarry is taken from the 33-kV line a few hundred yards away, where there is a tapping and direct reduction to 440 V, and from which point the quarry company ran its own underground cable to the workings —altogether an extraordinary development in such an isolated spot.

We continue north. There is always a group of mountains in every direction with ever changing contours, many patches of last winter's snow still about in mid-summer, and always the 132-kV and 33-kV tower line. We speculate on the tremendous constructional and maintenance difficulties in such country and such weather, but there is high enthusiasm everywhere.

At Newtonmore we see a tiny community with an overhead scheme including street lighting fed from an 11-kV line back from another tapping on the 33-kV circuit at Kingussie where we next arrive. We soon pass into the 1932 Special Order area controlled from Elgin, and now we are at Kincraig where there is another tapping on the 33-kV circuit and where the country begins to open out a bit. But it is still extremely sparse. Next we see some of the forests which have supplied transmission-line poles; but only a small proportion of the trees are large enough. Past Loch Alvie and on to Aviemore where there is another l.v. network and some good street lighting, and we reach Boat of Garten where the 132-kV circuit is tapped for a 33-kV line to Inverness 24 miles north-west, as the crow flies; but the crow and the line do not take the same route.

The substation here, with its 10,000-kVA transformer capacity, is still regarded as temporary until such time as a supply can be obtained from the western area. It was an essential requirement during the war because of the heavy demands of the services in the Inverness-Elgin area. We pass on north-easterly, still with the 132-kV and 33-kV line, to Nethy Bridge where the 33-kV line is again tapped and a 300-kVA substation is provided with three outgoing 11-kV feeders with auto-reclose switches.

We continue north-east to Grantown-on-Spey where, after inspecting the old generating station, we retreat to Boat of Garten to take the road north-westerly to Inverness. The 132-kV and 33-kV line continues along the Spey Valley to Keith, with further tappings en route at Ballindalloch and Dufftown. The 96 kW of generating plant originally at Grantown has been transferred for peak-load service elsewhere, and replaced by two substations in the town with a total transformer capacity of 400 kVA and fed at 11 kV from a tapping on the 33-kV circuit. The load is purely residential and tourist.

Out from Boat of Garten to Inverness we pass another Post Office repeater station which demands about 10 kW. Now we are at Slochd Pass where the road is often blocked immediately the snows start. Near here the 33-kV line to Inverness was reinforced by pole blocks and side stays after being severely damaged in the "gab o' May" (early May storm) a few years ago. The fantastic but real story is that after having six inches of ice on it the line was clear in a day.

We now pass Kyllachy, the scene of a small bulk supply to an estate, the owners of which built their own line. There are three other similar schemes off the Inverness line, each with a demand of about 25 kVA. The isolated Meallmore Hotel has just come on. And now, as we begin to approach Inverness, the scene rapidly changes into lower land and cultivation again, and after we have spent two days continuously amid the close-up mountains we are conscious of a relief at the change.

Inverness is the focal point in the link up with the Keith-Elgin district, Boat of Garten

and the Loch Luichart hydro-electric power station in the Ross-shire (1926 Act) area. The substation has a transformer capacity of 6,000 kVA in two banks, and it provides a partial bulk supply to the Inverness Corporation at 6·6 kV. But not the least interesting feature of this substation is the work, presumably of the substation attendant, in the form of really delightful flower gardens bordering the site.

The Loch Luichart generating station has a capacity of about 2,000 kVA with generation at 3 and 11 kV. In addition to the interconnection with Inverness there are 11-kV feeders out to Dingwall. From Dingwall the 33-kV main feeder is continued to Tain and the 11-kV feeder runs through various small towns and villages, including Invergordon, until it joins the 33-kV Tain line. From Tain 11-kV lines run west to Ardgay and Bonar Bridge, and an extension is now under construction from Bonar Bridge to Lairg where the undertaking has a small 200-kW diesel generating station. Also from Tain 11-kV lines are extended by submarine cables across Dornoch Firth and Meikle Ferry, and on to Dornoch, Golspie and Brora where there is a 500-kW oil generating station.

There is an 11-kV extension from Brora to Loth from which it will be extended to Helmsdale at the northern extremity of the area. A projected scheme which was compulsorily left in abeyance at the outbreak of the war, but for which permission to proceed has now been obtained, provides for a line to Fort Augustus down the side of Loch Ness. The Northern Area had the greatest service load of any of the areas during the war, 1,400 kW out of a total load of 4,100 kW in 1944. Now the total load is 5,000 kVA and the service load is 800 kVA, i.e., 16 per cent against 34 per cent of the smaller total load.

Now we run north-easterly along the Moray Firth coast to Elgin. There is an extraordinary change in the landscape of this northern district, with its rich cultivation and pastures occasionally reminiscent of Kent and Surrey, and even Devonshire. This is all reflected in the many 11-kV legs which go out north and south from the 33-kV line which runs first along the coast and then gradually inland via Elgin to Keith. But other contributory factors to this development are a fair amount of industry which seems to increase as we travel east and various airfields and garrisons *en route*.

Nairn supply was established in 1934. Now it has three substations, 500 consumers and a maximum demand of about 600 kVA. At Auldearn we hear a repeated story—" not yet on, waiting for poles." At Forres there is the Ben Roach distillery with a high-power-factor load at about 30 kVA, and several small sawmills which take supply in addition to the usual shop and domestic load. From the 2,000-kVA Forres substation there is a comprehensive 11-kV network out particularly to Burghlord in the north where the B.B.C. transmitting station demands 400 kVA, and on to the city of Elgin, with its population of about 10,000 and the headquarters of the Northern area (1932) of the undertaking.

Summer Schools

THE Institute of Industrial Administration is organizing a summer school to be held at Oriel College, Oxford, from the 24th to 31st July. The school will be open to anyone interested in management and in training for management, but it is intended mainly for persons engaged in industry or commerce in a managerial capacity. The main theme will be the relations between theoretical instruction and examinations on the one hand, and practical training under working conditions in industry and commerce on the other. Inquiries should be addressed to Dr. F. T. Chapman, C.B.E., Institute of Industrial Administration, Artillery House, Artillery Row, London, S.W.1.

During the previous week a summer school for teachers of management subjects is being organized jointly by the Ministry of Education and the Institute of Industrial Administration. Inquiries regarding this school should be addressed to the Secretary, Ministry of Education, Curzon Street House, Curzon Street, London, W.1.

By the courtesy of Professor Sir Lawrence Bragg, O.B.E., F.R.S., a summer school in metal physics will be held in the Cavendish Laboratory, Cambridge, from 23rd August to 3rd September. A detailed syllabus and form of application for admission may be obtained from Mr. G. F. Hickson, M.A., secretary of the Board of Extra-Mural Studies, Stuart House, Cambridge, to whom the completed application form should be returned not later than 1st June, 1948.

Copper Resistance to Soil Corrosion

AN informative 50-page illustrated booklet entitled "Copper Underground: its Resistance to Soil Corrosion" has been published by the Copper Development Association, Kendals Hall, Radlett, Herts. It contains much more extensive data than publication No. 35, which it supersedes, indicating that copper pipes need to be protected only when buried in a few exceptional types of soils.

Views on the News

Reflections on Current Topics

ALL electricity consumers received a little folder on Vesting Day, which was designed to establish confidence between them and the new authorities and give them an idea of what the change-over means. The inclusion of a map of the consumer's particular area with a message from the Area Board chairman got somewhere near the "personal touch" which all agree to be essential. But I am a bit doubtful of the picture on the front of the pamphlet showing a child on a chair operating a switch and remarking: "Mummy forgot to switch it off." Of course Mummy shouldn't have left a light burning unnecessarily, but the implication seems to be that now the new authorities have taken over switching off has assumed greater importance than use.

* * *

Sir John Kennedy's valedictory party to the staff of the Electricity Commission last week was anything but a funereal occasion, despite the mock solemn form in which the programme was printed. As Mr. Marson, the secretary said, the work of the Commissioners would have to go on and it will still be largely in the same hands. All the same, it is a sad thing to see the end of a body which has done so much to shape the electricity supply industry and has thus rendered great service to the country during the past twenty-eight years.

* * *

A certain amount of touchiness has been displayed in connection with some of the many functions arranged to mark the passing of municipal electricity undertakings to the new authorities. At Blackburn, for instance, the Conservative members of the Town Council boycotted the Electricity Committee's dinner as a protest against the "confiscation" of the undertaking without proper compensation. At Morley, on the other hand, the protestants were the Labour members of the Council, who apparently objected to the use of electricity funds for such a function. One Labour councillor who did attend said that "feeding their faces at a time like this should not be done; the money could be better spent by passing it on to the nation." The chairman of the Electricity Committee pointed out, however, that the luncheon was being paid for privately and consequently would not cost the ratepayers a penny.

* * *

In equipping the factory shown on the "More and More Production" poster with three chimneys, the Ministry responsible has somewhat spoiled the strength of the appeal. These chimneys complete with emissions may, for aught I know, be necessary to give artistic balance to the design, but in the eyes of the hundreds of thousands of people who worked in the newer factories during the war they depart from verisimilitude. A typical modern factory should not require such chimneys. Even if there were no means of obtaining electricity from power stations generating (under conditions of controlled combustion) perhaps a thousand times the horse-power required by the individual works, the waste of carbon in the fuel as indicated by the black smoke discharged should not and, indeed, would not be tolerated.

* * *

A correspondent to *The Times*, referring to the steps being taken to limit domestic demand during peak hours, mentions that in Geneva a device is in use which records separately the consumption during the high-load periods. This consumption is charged for at a higher rate than at other hours. No doubt this scheme has some effect upon the load, but it possesses the demerit of all schemes for limiting demand or consumption by price differentiation,—that is, they do not worry those who can afford to pay and thus place the poorer consumers at a disadvantage. If there is to be effective demand limitation let it be a clean cut rather than this.

* * *

I hear that there is a proposal afoot to form an "Ex-J. & P. Association" to enable the many engineers who have been associated in the past with Johnson & Phillips, Ltd., to get together. The work of getting into touch with them has been undertaken by Mr. A. J. Shrosbery, 1, Edgwarebury Court, Edgware, Middlesex (Edgware 3951). Mr. Shrosbery, who was formerly in the company's Contract Department, would be glad to hear from all J. & P. men who are interested.—**REFLECTOR.**

Load Dispatching on the Grid

Long- and Short-term Plant Availability

THE expression "load dispatching" is now commonly employed to describe the transmission of energy over a network in accordance with predetermined programmes. In its more complex form it is concerned with the net interchange of energy between sections, having regard for the differing costs of production at various generating stations, to ensure that adequate energy is furnished with reasonable security at the minimum overall cost.

How this is done on the British grid system is explained by MR. A. R. COOPER (C.E.B.) in a paper recently read at the Institution of Electrical Engineers. This practice involves planning of two kinds, the first being long-term forecasting to determine how generating plant will need to be added to and transmission lines reinforced to carry the load that will occur three years ahead.

In this forward planning the tendency is to under-estimate loads. Even when estimates are based on the assumption of zero transfer between large-load areas, the actual transfers have been as large as 292 MW at times of peak load.

Secondly, short-term planning is needed for the preparation of daily load-dispatching programmes, designed to make the most economical use of available generating plant. Sudden departures from planned transfers are due chiefly to two causes. First, local weather changes; a black cloud over central London can increase the load by 500 MW. Secondly, the timing of normal variations in demand; for example, the lunch-time load drop occurs earlier in the north of the country than in the south, causing load reversal of more than 100 MW in ten minutes.

So far as the future is concerned, the very material monetary savings that will result from improvement of the availability of plant justifies intensive research into the subject. Metering developments are already in hand, but the author does not believe there is a case for superimposing expensive and complicated automatic control on a system which is being operated without adequate reserves of plant and line capacity. It is the author's view that the bad power factor of many "undertaking loads" should be corrected at the source by installing capacitors or synchronous machinery locally, instead of generating reactive kVA by turbo-generators for transmission over the system.

DISCUSSION

MR. E. B. POWELL (London Power Co.) suggested that it would not be surprising if modern plant was less reliable than older plant. The art of machine design was improving and the margins allowed on all materials had been cut down.

The author's graph indicating loss of output due to unsuitable fuel gave the impression that fuel had recently improved, but he did not think that that was the case. There had been an improvement in maintenance and a considerable improvement in CO_2 and, moreover, stations which had to burn 57 varieties of fuel, of which half-a-dozen might have to be used within an hour, had improved their methods of dealing with them.

The training of staff was essential and he hoped it would be possible for junior engineers to be moved about the country to obtain wider views and experience of manufacture, because eighteen months in a manufacturer's works was worth ten years in a power station, so far as maintenance was concerned.

Payment for Security

MR. F. C. WINFIELD (Merz & McLellan) pointed out that the supply industry had no storage capacity. In making advance estimates, therefore, there must never be negative errors. They must pay for security by ante-dating capital expenditure on 2½ per cent of their plant for one year, less the gain in efficiency by having an excess of efficient plant which could be run instead of less efficient plant. According to the paper, the range of error in estimating had been about 10 per cent of the total plant installed, but that included the war and post-war period; in normal times it should not exceed 3 per cent.

If automatic frequency control were adopted, care must be taken not to lose the flexibility which the ability to raise and lower the frequency now conferred. There seemed to be a fashion at the moment for automatic boiler control, but he was puzzled to know why; it might lead to economy with a continuously-fluctuating load, but not otherwise. It was better to provide improved facilities for controlling the boilers.

MR. J. D. PEATTIE (C.E.B.) said he felt that there was a tremendous field for investigation and improvement. He doubted whether at present there was a case for automatic frequency control on the grid.

MR. F. W. LAWTON (Birmingham Electricity Supply) doubted whether engineers would make errors of the order of 10 per cent in load estimation. If such errors had been made they were probably due to the undertakers fearing Section 13 and to the C.E.B. trying to make a financial success of the grid system. High-speed machines had in the early stages carried with them a reduction of availability. If availability was to be regarded as of the highest importance, the normal plant installed in most power stations should be of well-tried designs of known availability. General adoption of the highest efficiency plant would have to follow in the

Parliamentary News

By Our Special Reporter

IN the House of Commons last week Mr. Granville Sharp asked the Secretary of State for War what stocks he had of electrode wire which were surplus to current requirements and could be made available to industry.

Mr. Shinwell replied that 7 million ft of electrode wire was sold through the Ministry of Supply during January and a further 13¼ million ft had since been reported to the Ministry for disposal as surplus.

Mr. Granville Sharp asked the Minister of Supply, what arrangements were made to ensure that electrode wire declared surplus to the needs of the Service Departments was made available to British industry; and what action should be taken by individual firms to obtain small quantities of the 13¼ million feet of electrode wire available.

Mr. George Strauss said that electrodes declared as surplus to the Ministry of Supply were sold in bulk to the trade under a running contract. Individual users should obtain their requirements through normal trade channels.

Bankside Power Station

Mr. Erroll asked the Minister of Fuel and Power if, in view of the forthcoming shortages of fuel oil supplies revealed by the Economic Survey for 1948, he would postpone the erection of the oil-fired power station at Bankside.

Mr. Robens, Parliamentary Secretary to the Ministry of Fuel and Power, said he would not. A power station would be required at Bankside, and oil burning plant had been decided upon in order to preserve the amenities in neighbouring areas on both sides of the river. No large quantities of fuel oil would be required for two to three years by which time it was hoped the oil position would be easier.

Mr. Robens told Mr. Skeffington-Lodge on 25th March that the contracts for site preparation, for turbo-alternators and boilers and for the pilot gas washing plant for the new Bankside power station had been let and work had begun on them. There was a labour force of about fifty men actually at work on the site.

London Transport

WHAT is the last report under the old dispensation has been issued by the London Passenger Transport Board. It is the fourteenth and covers the year ended 31st December last. With regard to traffic it is shown that although the population of the area served was 200,000 less than before the war there was a 30 per cent increase in passenger-miles—from 8,648 million in 1939 to 11,334 million last year. Of the total of 610·5 million service car-miles operated in 1947 the railways accounted for 204·7 million and trams and trolley-buses for 109·1 million.

The war caused the suspension of the 1935-40 programme of improvements but special authorization was given for the carrying out of the eastern and western extensions of the Central Line and the electrification of the Shenfield line. By the end of 1947 Central Line trains were running to Woodford and Newbury Park in the east and to Greenford in the west. Work is proceeding on further extensions of the Central Line and the electrification of the Shenfield line.

By 1940 practically all the tram routes north of the Thames had been converted to trolley-bus operation but the work of conversion had then to be suspended. After six years of war, it is said, circumstances have so changed that the financial advantage of the trolley-bus over the omnibus has so diminished as to be negligible and now it is intended that the trams shall be replaced by omnibuses.

The net revenue for the year (£4,719,530) is treated as available for the payment of interest on the London Transport stocks. The "C" stock receives 3·180066 per cent (against 3 per cent for 1946), equivalent to about £3 3s. 7d. per cent. Capital expenditure during the year included £905,174 on railways and £123,281 on trolley-buses.

Assurances to Consumers and Employees

EVERY electricity consumer in the country was to receive yesterday a little folder prepared by the British Electricity Authority. All of them contained a message from Lord Citrine briefly explaining the new system and asking the consumers to be patient under the present conditions of plant shortage. He hoped that when its £450 million development programme was completed the Authority would be able to supply, at reasonable charges, all the electricity needed. Lord Citrine also stressed the ultimate benefits of the unified voltages and systems and simpler methods of charging which would be introduced.

Inside the pamphlet was a map of the Electricity Area in which the particular consumer was situated with another message signed by the chairman of the Area Board which announced the determination of the new "owners" to maintain close personal contact with consumers and gave an assurance of good service.

Each employee of the British Electricity Authority has had a letter from Lord Citrine in which he asks all of the staff to work together with him to make the great undertaking an outstanding success. He emphasizes that the Authority attaches the greatest importance to the human factor and members of the staff are not to feel that they are just cogs in a machine, seeing nothing of the value or significance of their work. Working conditions and welfare will be a particular care of the Authority.

CORRESPONDENCE

Letters should bear the writers' names and addresses, not necessarily for publication. Responsibility cannot be accepted for correspondents' opinions.

Wind Power

WITH reference to the editorial comment on wind power in your 19th March issue, while I was a prisoner of war in Germany during the recent war, I worked for two years with a German contractor in Elbing, East Prussia, who owned a wind-driven power station.

What the output of the station was I'm not quite sure, but I know it supplied lighting, heating and power to a village of 300 inhabitants, also a carpenter's workshop, a blacksmith and two farms.

The station and wind tower which was about 100 ft high stood on top of a fairly high hill overlooking the village. Housed in the station were two 200-V d.c. generators and a storage battery. One generator was driven by the wind tower, the other by means of a diesel engine which was used only as a stand-by.

I believe the station was built about 1937 by Siemens-Schuckert. During the time I was there the diesel was never required, except when routine maintenance was being carried out on the wind tower.

Fife. J. JOHNSTON.

Peak Control

THE appointment of a committee to investigate the possibility of controlling the maximum demand of domestic and other non-industrial consumers is not surprising after the dislocation and loss which followed the breakdown in the normal working of the electricity supply system a year ago. Its great cost gives a measure for judging the reasonableness of plans for dealing with the difficulty. While many, as evidenced in the pages of your journal, are engaged in devising technical methods, few seem to recognize the implications of these schemes in the direction of policy.

Maximum limits have been set for undertakings and for the larger industrial consumers and, until new generating plant can be brought into commission, small power and non-industrial users should also be informed as to the demand they may impose on the electricity supply system.

For domestic consumers the first rational step would be to decide what is the average allowance, and then to follow on with adjustments to take account of individual consumers' needs. At the moment the domestic consumer has no idea as to the amount of apparatus he may reasonably use when the electricity supply authority is in difficulty.

Low frequency and low voltage are intolerable and, as a means of effecting load control, must be dispensed with as early as possible. District control is no more satisfactory and until individual control can be applied, section control is the only course left. The injustice of present methods lies in the disregard of voluntary reduction on the part of the consumers subjected to the interruption of their supply. To switch off a group of, say, one hundred consumers because a few are making no effort to reduce their demand is rough justice, but is more satisfactory than the alternative practice of switching off whole districts.

As an industry we should, like any other business in time of stress, show preference for our regular customers and base our tariffs either on actual or prospective demand. While we are concerned more with maximum demands than with kWh consumption, it appears that kWh charges should be relieved of all capital and administration costs, and until consumers who normally use electricity for lighting and a few low-wattage appliances install approved devices for limiting their prospective occasional heavy space-heating demands, they should be subjected to the maximum charges appropriate to the all-electric household.

The multiple-rate tariff in common use twenty years ago permitted much scope for fraud, and this seems to have been forgotten by the present advocates of remote control of specific usages. Effective prosecution of consumers who break seals on apparatus belonging to the supply undertaking presents considerable difficulty, and effective legislation to enable offenders to be dealt with is essential for the control of individual consumers' loads by means of devices installed on their premises.

If a lighting consumer's load is limited through the installation of a 5-A calibrated fuse, part relief from a high maximum demand charge must be conditional on the seals remaining unbroken and the payment of not

less than 5s. for replacement of blown fuses.

Many of our present troubles are due to unwarranted reliance on diversity and natural reluctance to adopt restrictive practices. We have, however, to avoid penalising those who have accepted our gospel of domestic electrification, and to place the greater burden on our cold-weather friends, who are responsible for the major portion of our difficulty through the connection of undeclared heating appliances.

In framing tariffs allowance should be made for the cost of circuit alterations to allow of load limitation in the completely electrified house, and, by reducing the kWh charge to a minimum, for the increased losses incurred with storage devices.

Cardiff. G. H. BOWDEN, M.I.E.E.

PERSONAL and SOCIAL

News of Men and Women of the Industry

THE examining board (Messrs. H. Nimmo, E. R. Wilkinson, L. R. Perkins and E. J. Sutton) have announced their decision in connection with the W.E. Highfield Shield Competition, 1947, held under the auspices of the Association of Supervising Electrical Engineers. The Shield was presented for annual competition among the membership by the late Mr. W. E. Highfield, when president of the Association in 1923. The prizes are awarded for the best papers not exceeding 2,000 words on subjects dealing with the electrical industry and/or the Association. The first prize (£5 5s. and the Shield) has been awarded to **Mr. A. N. D. Kerr,** A.M.I.E.E., for his paper "The Sales Engineer in Industry"; the second prize (£3 3s.) to **Mr. F. H. Heathcote,** Associate I.E.E., for his paper "Some Notes on the Electrical Requirements of S.R. & O. 345 (Regulations Prescribing Standards for School Premises)"; and the third prize (£2 2s.) to **Mr. E. P. Hollis,** B.Sc., A.M.I.E.E., for his paper "Bailment Instalment Sales and the Electrical Industry." The Shield and prizes will be presented at the Association's opening meeting of the 1948-49 London lecture session next October.

Mr. V. C. H. Creer, M.A.(cantab.), has been appointed to the board of the British Thomson-Houston Co. Ltd., in succession to **Mr. H. A. Lingard** who is shortly retiring from active service with the company owing to ill-health. On the outbreak of war, Mr. Creer became an administrative officer in the Ministry of Economic Warfare, and he was afterwards transferred to the Air Ministry. He later became well known to many executives in the lamp industry when, as Deputy Director of Lamp Production at the Ministry of Aircraft Production, he was made the Government production authority for all matters appertaining to electric lamps. Mr. Creer joined the Lamp and Lighting Department of the B.T.H. Co. in 1945 as assistant to Mr. H. A. Lingard and was appointed general manager of the Department in June last year. He takes his place on the board with effect from 1st May next.

Mr. V. C. H. Creer

Mr. R. L. Paice, A.M.I.P.E., who has been appointed to the board of the Igranic Electric Co., Ltd., joined the company in 1916 as an apprentice and in 1925 was transferred to the company's Yorkshire sales office. Later he specialized in electric motor control gear for machine tools. After a further period at the Bedford works Mr. Paice was loaned in 1940 to the Ministry of Supply as a senior technical assistant. He helped in the formation of the Directorate of Industrial Equipment, and was responsible for the M.O.S. activities in electric motor control gear. In 1941 he returned to Yorkshire as manager of the Igranic Yorkshire sales office and in May, 1945, he was appointed to his present position as sales manager at the Bedford works.

Mr. R. L. Paice

Mr. S. F. Steward, C.B.E., has resigned from the board of Bull Motors (E. R. & F. Turner, Ltd.), following his appointment as chairman of the South Western Electricity Board.

Sir Clifford Paterson, chairman of the British Standards Institution and a director of the General Electric Co., Ltd., arrived in New Zealand on 19th March on a visit during which he will consult officials of the New Zealand Standards Institute and the Department of Scientific and Industrial Research and inspect North Island hydro-electric projects.

Mr. F. B. Bailey, mechanical maintenance engineer at the Longford power station, has retired from the Coventry Corporation Electricity Department after forty-two years' service. He has been presented with a watch by his colleagues in the department.

Mr. E. J. Sutton, M.I.E.E., has been appointed director and general manager to Haden Electrical, Ltd., the new subsidiary company of G. N. Haden & Sons, Ltd. **Mr. J. R. Parker,** A.M.I.E.E., has been appointed manager of the Technical Department of the new company and will be responsible for all design and planning, and **Mr. J. H. K. Pendry** has joined the company as manager of the Contracts Department and will be in control of all installation and contract works.

Mr. W. Kilsby, personal assistant to the managing director of Edmundsons Electricity Corporation, Ltd., retired on 31st March after forty-five years' service. During a party at Grosvenor House, London, in celebration of the organization's jubilee, Brig. Gen. Wade H. Hayes, managing director, presented Mr. Kilsby with a recording barometer and a pair of binoculars from his colleagues. Since 1919, Mr. Kilsby had been editor of "Edmundsons Monthly," the staff magazine.

Mr. G. F. Thick

Mr. G. F. Thick has been appointed to the board of Macrome, Ltd., of which he has been general manager since 1945.

Mr. Leslie C. Sharp, sales director of Venner Time Switches, Ltd., left by air for India last week and expects to be away for a few weeks.

Mr. R. Woods, M.I.E.E., managing director of the General Cable Manufacturing Co., Ltd., has been elected chairman of the Independent Cable Makers' Association.

Mr. D. G. Sopwith, B.SC.TECH., M.I.MECH.E., has been appointed superintendent of the Engineering Division of the National Physical Laboratory, Department of Scientific and Industrial Research, to fill the vacancy caused by the appointment of **Dr. G. R. Hankins,** as director of mechanical engineering research in the Department. Mr. Sopwith, who is forty-one, has been at the National Physical Laboratory for twenty years and recently has been senior principal scientific officer in the Engineering Division. He has published papers on a variety of subjects amongst which are fatigue and corrosion fatigue of metals, lifting gear, and springs. He is a Whitworth Scholar.

Mr. Sidney L. Drapier, A.M.I.MECH.E., technical assistant to the power station superintendent at the Worcester Corporation Electricity Department, has been appointed assistant station superintendent at the Newton Abbot station, Torquay Corporation.

Councillor W. H. Malcolm, who has been invited to become Mayor of Coventry in succession to the late Alderman Robert Cramb, is assistant general manager of the G.E.C. telephone works at Coventry.

The Admiralty Electrical Engineers' Association held its second annual dinner on 16th March at Bath. Mr. E. W. Tucker (president) was in the chair, and the guests included Mr. S. F. Steward (chairman of the South Western Electricity Board) and Mr. W. Hill (vice-chairman of the Western Centre of the Institution of Electrical Engineers and chief engineer of the West Gloucestershire Power Co.). In proposing the toast of the Association, Mr. J. C. Thompson referred to the extremely wide field in electrical engineering matters which the Department of the Director of Electrical Engineering now covered. Mr. Couch, Deputy Director of Electrical Engineering, proposed the toast of the guests, and Mr. Steward, replying, explained in an entertaining manner some of the difficulties that faced him in his new job.

The Willesden works of **Lancashire Dynamo & Crypto, Ltd.,** entertained nearly 800 guests at the Porchester Hall, Bayswater, on 19th March, on the occasion of the annual gala. The main feature of this year's event was the presentation of gold watches to thirty members of the staff who had completed twenty-five years' service with the company and the reception of sixteen others who had previously received the award. The presentation was made by Mr. J. G. Shaw, vice-chairman of the company and founder of the Willesden works, supported by Mrs. J. G. Shaw and Mr. D. C. Lorkin, director. All long-service employees also received food parcels sent by the company's

Mr. J. G. Shaw, vice-chairman, speaking at the presentation of long-service awards to employees of the Willesden works of Lancashire Dynamo & Crypto, Ltd. On his left is Mr. D. C. Lorkin, director

Australian agents, O. J. Nilsen & Co., of Melbourne. Besides employees at Willesden,

there were a number present from other works and offices of the group, including the Irchester (Northants) factory.

Mr. H. Martin, M.I.E.E., M.I.E. (S.A.), electrical engineering manager, H.M. Dockyard, Chatham, recently retired from the Admiralty service after serving for thirty years. At a farewell gathering of staff and colleagues he was presented with a refrigerator. Mr. Martin, who entered the service at Portsmouth Dockyard, was a pioneer in the development of electric arc stud welding, and he was also the main originator of the Stelmar optical system which has been applied for a variety of purposes in projection lighting. Before joining the Admiralty service he had experience in large power stations and in colliery engineering in South Africa. He proposes to undertake advisory work in connection with electric welding, projection lighting, etc.

Viscount Ridley (chairman) and other directors of the North-Eastern Electric Supply Co., Ltd., each received a surprise presentation following the sixtieth—and last—annual meeting of the company held in Newcastle, on 23rd March. The gift was an artistically bound illustrated booklet, a "Souvenir of a Great Undertaking" which, besides giving the history of the company since 1889, contained a list of directors since that date and photographs of all the chairmen.

Mr. C. R. F. Taylor, sales manager of Smith Meters, Ltd., is leaving for Johannesburg on 16th April. He will visit all the principal centres in the Union and Southern Rhodesia and expects to be back in England by 2nd July.

Mr. A. H. Goude, until recently in Birmingham, has been appointed manager, B.T.H. Lamp and Lighting Sales, Southern Area. His office is in Crown House, Aldwych, London, W.C.2.

Mr. John Breeze, F.C.I.S., F.C.W.A. has retired from the secretaryship of the Hart Accumulator Co., Ltd., after thirty-two years' service.

Mr. A. Shore, A.M.I.E.E., retired from service with the Marconi Company at Easter after thirty-six years' service, latterly as chief of the section responsible for the production of technical and sales literature. Mr. Shore joined the Test Department of the company in 1912, and subsequently served in the Field Station Department as assistant to the principal of the Marconi School of Wireless Communication, and in the Sales Department before taking charge of the production of technical literature.

Mr. F. E. J. Ockenden, for some time past technical director of Everett, Edgcumbe & Co., Ltd., has sailed for Australia to become chief technical adviser to Watson Victor, Ltd., sole agents in Australia for Everett, Edgcumbe & Co. Mr. Ockenden is well known in both electrical engineering and physics circles in this country, particularly in connection with the instrument industry to which he has made many original contributions, both in design and manufacture. He is a fellow of the Physical Society, and past-chairman of the Measurements Section of the I.E.E. and has served on many technical committees.

At an informal ceremony recently presided over by Mr. R. E. Everett, managing director of the company, Mr. Ockenden's colleagues presented him with a pair of binoculars.

Mr. L. J. Serjeant, manager of the Bradford works of the English Electric Co., Ltd., for sixteen years, was recently presented with a radiogram and a leather-bound book containing over 2,200 employees' signatures on his relinquishing the post. Mr. Serjeant has been associated with the company since 1906.

Mr. A. R. Knight, A.M.I.E.E., technical representative to the Morgan Crucible Co., Ltd., and formerly with Bedford Corporation and the English Electric Co., Ltd., is going to Australia. His forwarding address is c/o. Mr. J. P. Knight, LL.B., Price Hall Yard, Bradford.

Col. H. J. Wellingham, M.C., T.D., is continuing as president of the Batti-Wallahs' Society for a further year. **Messrs. B. E. Arkell** and **Walter Riggs** have been elected honorary members of the Society.

The Mayor of Southend-on-Sea **Ald. S. F. Johnson,** recently unveiled a memorial plaque to six employees who gave their lives in the war. After the unveiling an appreciation of the men was given by the borough electrical engineer and manager, Mr. R. C. Golding, M.Sc., and the plaque was dedicated by the Venerable Archdeacon E. N. Gowing, M.A. The plaque was carved from oak to a design by Mr. L. Cline a senior draughtsman in the department.

Obituary

Mr. W. G. Haywood, of W. G. Haywood & Co., manufacturing electrical engineers, died on 22nd March, aged seventy-one. The funeral took place on 25th March at East Horsley.

Mr. O. Lucas.—We regret to report the death, on 20th March at Nassau, Bahamas, of Mr. Oliver Lucas, joint managing director of Joseph Lucas, Ltd. He was fifty-six.

WILLS.— Mr. A. F. de Turckheim, late secretary of the National Joint Industrial Council, left £10,862 (£10,774 net).

Mr. Adam Sedgwick Barnard, M.I.E.E., A.M.INST.C.E., late manager of the Chloride Electrical Storage Co.'s stationary and vehicle battery home sales department, and formerly borough electrical engineer of Walsall, Hull and Lancaster, who died on 18th November last, left £5,637 gross (£5,197 net).

Mr. R. W. Young, head of the Switchgear Construction Department of the S.W. & S. Co. and its associated companies, left £4,453 (£4,331 net).

Mr. C. L. Page, of H. Page & Sons, electrical engineers and contractors, left £5,881 (£5,161 net).

Electricity and the Public

Opportunities for Further Service

By W. K. Fleming, M.I.E.E.,
Borough Electrical Engineer and Manager, Scarborough

WITH the transfer to one authority of a great industry serving eleven million consumers and intimately bound up with the industrial, commercial and domestic life of the nation, there arises inevitably the need to view afresh the responsibilities of the electricity supply industry to the public. The operations of the new national electricity authority will be watched and examined by many with critical attention. The authority will be judged, amongst other things, by the standard of its service to consumers and the character of its relationships with the public. Fears have been expressed that the intimate consumer relationships built up by individual undertakings for many years will give way to something less desirable under the large State-controlled authority.

There is, of course, an ever-increasing trend towards the centralization of affairs throughout the country generally, and there is a tendency for the widespread operations of large organizations to become obscure and unintelligible to the public. In the case of electricity supply, however, there is an opportunity for the new authority to formulate an enlightened policy of public relations, which can improve the efficiency of the industry and secure public appreciation and goodwill.

Public relations has been defined in many ways. It has been described as the art or practice of giving expression to the personality of an organization or service; as the interpretation of an organization to its public and the interpretation of the public to the organization; and as the administrative or operating philosophy of an organization. In general terms, these definitions are all true, but they are not specific enough. In a report issued some time ago by the National Association of Local Government Officers there is a definition of public relations which admirably summarizes the broad aspect of the subject and is worth recalling:

> "A public relations policy, as we visualize it, is a bridge between the administrator and the citizen—a bridge over which traffic passes in both directions. On the one hand, it must explain the local authority to the public, ensuring that its aims and policies, the services it provides, its method of working, its achievements, and its difficulties, are fully understood, and that the public is encouraged to co-operate with it to the fullest practicable extent. On the other hand —and this, though often overlooked, is equally important—it must explain the public to the local authority, maintaining a constant watch on popular need and opinion, surveying, analysing, and conveying the results of its inquiries to those responsible for the direction of public policy, nationally and locally."

If instead of "local authority" we read "British Electricity Authority," then the statement is brought up-to-date and becomes a ready-made keystone of policy for the practice of public relations in the nationalized supply industry. A fundamental and important principle of public relations expressed in the foregoing definition, is that it is a two-way service. Too often, when public relations is practised in the narrow sense of publicity, the flow of communication and information is in the outward direction only.

Excellent though the N.A.L.G.O. definition is, there is one aspect which requires further amplification and analysis, and which has a special significance for a large public service organization. The term "public" or "general public" is too indefinite; the electricity supply organization has many publics and its relationship with each one requires special consideration.

Who, then, are the "publics" of the electricity supply industry? What groups of people have a special interest, direct or indirect, in electrical activities, whose confidence and goodwill should be cultivated by the industry? Electricity supply employees, electricity consumers, trade unions, local authorities and the public in general are among the most important groups. There are other groups in industry and commerce closely identified with electricity supply and these would include particularly manufacturers, wholesalers and distributors, electrical and allied research, and electrical contractors. Even the Government itself is a public of a special kind. The goodwill and co-operation, therefore, of *all* the publics related to the operations of our industry is a basic requirement in our policy. It is clear,

too, that more than one method of approach is necessary if the industry is to achieve the best possible relations with all the groups.

First on the list of " publics " for any large organization are its own officials and employees—in other words, public relations begins at home. The favourable acceptance by the public of an organization and its services depends primarily on the spirit, efficiency and behaviour of the personnel within the organization. The public's judgment is influenced to a large extent by the actions of the employees of an organization or industry—from the highest placed official to the humblest servant. They are the organization to the public, and what they say and how they behave determines to a substantial degree the issue of whether goodwill is built up or destroyed. This is particularly true of those officials and employees who have personal contact with the public. There is need for attention to be given to the task of educating and training our employees on the right way of dealing with the public so as to inspire confidence in the service.

Achieving Good Employee Relations

What are the responsibilities of the industry to its personnel on the question of good relations ? Good employee relations means in a general way satisfactory agreements for wages and salaries and conditions of service; social and welfare facilities; joint committees to help secure harmonious co-operation between management, supervisors and employees; schemes to assist the training of young employees and for the recognition of outstanding achievements and accomplishments; and the circulation of information to employees on the organization's progress, plans and policies.

In principle, there is nothing that is specially new in the broad conception of these matters, but there is scope for the wider practice of some of them in the electricity supply industry. The aim should be to build up an *esprit de corps* so that employees are interested and contented in their individual jobs and serve the new national organization with pride, efficiency and enthusiasm. By these means, the public relations spirit will permeate the whole of the industry and the way will be easier for the favourable recognition and acceptance by the public of the industry and its service.

The general primary aim of a public relations policy is to secure a favourable public opinion. The industry starts with the great advantage that the superior qualities of electricity are universally recognized and appreciated. This is not sufficient, however, to secure public acceptance of the organization behind the service. Public opinion is fundamentally determined by self-interest, and the public's assessment of the worth of an organization lies in the deeper significance of how completely it operates in the public interest. It will judge this in the first place, as previously indicated, by the standards of courtesy and integrity experienced in its personal contacts with the officials and employees of the industry.

Secondly, the public must be reminded of the methods and accomplishments of the industry in carrying out its ideals of social service to the nation, and informed of the plans and policies of the industry towards this end. Our public relations work must be positive and not negative in outlook if we are to remove doubt or criticism or even mere indifference, and instead win goodwill, approval and confidence.

No public relations programme is complete unless some means exist to promote and measure the inward flow of communication *from* the public, as indicated in the second part of the N.A.L.G.O. definition. We require to know more about the state of public thinking and of public knowledge, about the experiences, habits, hopes and opinions of people concerning electricity supply, before we can be sure that our service is meeting the needs and interests of consumers in the best possible ways.

Public opinion can be measured by means of the method of social survey which is now fairly well-known and which is becoming increasingly used in this country. The social survey based on a carefully planned investigation of social habits and environment should be an essential part of our public relations programme, so that our policies may be adjusted to the actual living and economic conditions and wishes of the community.

Consumer Research

Surveys based on consumer research can provide information, too, on regional differences in the application and use of electricity supply. Local habits and customs, geographical position, climate, the nature of local industries, standards of living, income and social development, and the efficiency of competition from other fuel industries are all factors which influence the application and consumption of electricity. It is necessary, therefore, that consumer research should be

based on knowledge of the special circumstances of the various regions so that first the needs and views of the regional groups are properly understood and, secondly, that any investigation is representative of the country as a whole whenever an expression of national opinion is required.

This review of the range of public relations, it is hoped, shows what a special place it occupies in the general pattern of public service administration and higher management. In effect, public relations is merely human relations. It is so because the operation of a business or service is a human affair with human beings, dependent on each other for their welfare and prosperity, associated with the various functions of management, production and utilization. And if public relations is concerned at so many points with the promotion of goodwill and understanding, then indeed it is more than a part of the organization which it serves—it is an asset to the common good in a much wider sphere.

Next Week's Events

Monday, 5th April

BIRMINGHAM.—James Watt Institute, 6 p.m. I.E.E. South Midland Centre. "Design of Large Vertical-Shaft Water Turbine Driven A.C. Generators," by E. M. Johnson and C. P. Holder.

NEWCASTLE-UPON-TYNE.—Neville Hall, 6.15 p.m. I.E.E. North-Eastern Centre. Annual general meeting. "Design and Construction of a New Electron Microscope," by M. E. Haine.

RUGBY.—Electricity Showrooms, 6.30 p.m. I.E.E. Rugby Sub-Centre. Report on "The Practical Training of Professional Electrical Engineers," to be presented by Brigadier F. T. Chapman, a member of the Joint Committee on Practical Training in the Electrical Industry.

Tuesday, 6th April

CAMBRIDGE.—Cambridgeshire Technical College, 6 p.m. I.E.E. Cambridge Radio Group. "Television Camera Tubes," by F. H. Townsend.

LEEDS.—Electricity Department, Whitehall Road, 6.30 p.m. I.E.E. North Midland Installations Group. Address by R. H. Rawll, chairman of the Installations Section.

LONDON.—Imperial College of Science and Technology, South Kensington. Physical Society's Exhibition of Scientific Instruments and Apparatus. To be opened at 3 p.m. by the President of the Board of Trade, Mr. H. Wilson. (The Exhibition will continue until 9th April.)

Oddfellows Hall, 186, Hammersmith Road, 7 p.m. Association of Supervising Electrical Engineers (West London Branch). "Time Control in an Industrial Plant," by C. R. Watson.

LOUGHBOROUGH.—College, 6.30 p.m. I.E.E. East Midland Centre. "The High-Pressure Mercury-Vapour Discharge and its Applications," by V. J. Francis and W. R. Stevens.

MANCHESTER.—Engineers' Club, 6 p.m. I.E.E. North Western Centre. "Design of Large Vertical-Shaft Water Turbine Driven A.C. Generators," by E. M. Johnson and C. P. Holder.

Wednesday, 7th April

LONDON.—Savoy Place, W.C.2. Convention of Scientific Radio held jointly by the Institution of Electrical Engineers and the British National Committee for Scientific Radio (set up under the auspices of the Royal Society). Sessions at 2 p.m.-4.45 p.m. and 6 p.m.-8.45 p.m. (also on 8th April at same times).

Institution of Mechanical Engineers, Storey's Gate, S.W.1, 6.30 p.m. Joint meeting of I.E.E. London Students' Section, Association of London Students of the Institution of Civil Engineers, and the London Graduates' Section of the Institution of Mechnical Engineers. Three short papers on "Underground Railways."

MANCHESTER.—Engineers' Club. Institute of Fuel (North-Western Section). 1.30 p.m., annual general meeting. 2.30 p.m., "External Deposits on the Heating Surface of Boiler Plant," by Dr. H. E. Crossley.

MIDDLESBROUGH.—Cleveland Scientific and Technical Institute, 6.30 p.m. I.E.E. Tees-side Sub-Centre. Annual general meeting. "Load Dispatching and the Reasons for it, with special reference to the British Grid System," by A. R. Cooper.

Thursday, 8th April

BRIGHTON. — Municipal Technical College, 7 p.m. Illuminating Engineering Society (Sussex Group). "The Properties of Glass used in Lighting Fittings," by J. G. Holmes.

LONDON.—At Institute of Marine Engineers, The Minories, E.C.3, 6.30 p.m. Institute of Welding (South London Branch). Annual general meeting followed by short films.

SOUTHAMPTON.—Guildhall, 6.30 p.m. I.E.E. Southern Centre. Faraday Lecture on "Electricity and Everyman," by Dr. P. Dunsheath.

Friday, 9th April

BATH.—I.E.E. Bristol Students' Section. "Electronics applied to Aircraft Services," by S. A. Ponting.

BIRMINGHAM.—Imperial Hotel, Temple Street. Illuminating Engineering Society (Birmingham Centre). "Mine Lighting," by F. Widnall.

Saturday, 10th April

LONDON.—Oak Restaurant, 18-24, Kensington High Street, W.8, 7 to 11 p.m. I.E.E. London Students' Section. Informal dance.

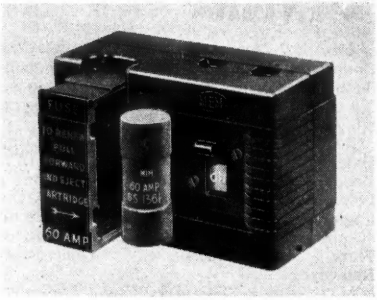
RECENT INTRODUCTIONS

Notes on New Electrical and Allied Products

Fused Switches

ALL-INSULATED fused switches of attractive design for domestic installations are offered by the MIDLAND ELECTRIC MANUFACTURING CO., LTD., Reddings Lane, Birmingham, 11.

Each unit comprises a double-pole slow-break a.c. switch with silver contacts and a h.r.c. cartridge fuse housed in a patented, quick release carrier that facilitates speedy replacement. Two sizes are available rated at 30 and 60 A, the dimensions of which are 2·15 by 4 $\frac{5}{32}$ by 1 $\frac{7}{16}$ in. (6·35 by 10·55 by 3·65 cm) and 3·25 by 4 $\frac{33}{32}$ by 2·25 in. (8·26 by 12 by 5·72 cm) respectively. If necessary a 15-A fuse carrier may be fitted to the 30-A model.



M.E.M. fused switch

Slow-break switches of similar design are also available with the same ratings as separate units.

Lamp Changer

A device for facilitating the removal and replacement of lamps ranging from 60 to 1,000 W in positions which are not easily accessible is produced by CABLE STRIPPERS, LTD., Leighton House, Potters Bar, Middlesex. The length of this " No Climb " lamp changer with which lamps at a height of 10 ft (3·05 m) may be reached is 5 ft 2½ in. (1·59 m). The weight is 1·5 lb (0·68 kg). One, two or three extensions are available, increasing the operational height to 15, 20 and 25 ft (4·57, 6·1 and 7·63 m) respectively. Four rubber-faced claws constitute the head and for ease of operation control levers are situated at both the head and handle ends.

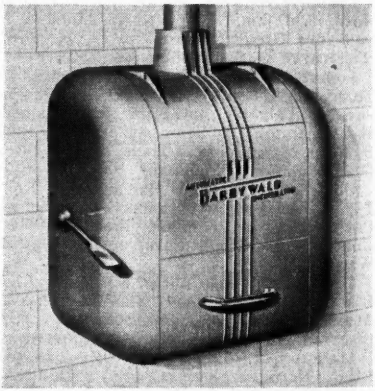
Radiant-Heating Lamp

The latest 100/130V radiant heating lamp to be announced by the BRITISH THOMSON-HOUSTON CO., LTD., Crown House, Aldwych, London, W.C.2, is the " Mazda " 250-W size for infra-red drying ovens. The bulb is of parabolic shape with a satin frosted crown; the stem half is coated on the inside with aluminium to form a reflecting surface which, being protected by the inert gas filling, does not tarnish. The screw cap is mechanically attached (cementless) to the bulb stem to enable it to withstand the severe heat.

The beam spread does not exceed 120 degrees and weight is reduced by the absence of an external reflector. Sheet metal busbar assemblies for two or four lamps are also available, wired for plug and socket connection; pairs of holders are connected in series for 110/130 V, or individually wired.

Sanitary Incinerator

An automatic incinerator suitable for the hygienic disposal of such things as contaminated bandages and surgical dressings is now being manufactured by APPLIED ELECTRICAL PRODUCTS LTD., Acme Works, Hirwaun Trading Estate, Aberdare, Glam., for the patentees, Barrywald Products, Ltd., 1, Leadenhall Street, London, E.C.3, and distributed by ALLIED METALS LTD., 62, London Wall, London, E.C.2. The action of depressing the lever situated at the side lifts the cover, switches on the two 1-kW heating elements and clears the combustion chamber of ash for subsequent removal from the drawer below. A time switch is incorporated which cuts off the heaters after five minutes, which is the maximum time required to dispose of the wettest article. The dimensions of the appliance are 19 by 18 by 10 in. (47·3 by 45·8 by 25·4 cm) and its weight is approximately 50 lb (22·7 kg). The cast aluminium case is finished in cream stove enamel with polished handles.



The " Barrywald " incinerator

Overseas Electrical Trade

Cable Exports at High Level

FROM Table 1 below it will be seen that British electrical exports in February were valued at £7·17 million. As a yardstick the results in both January, which possessed three more working days, and February last year, which was affected by the power crisis, are unsatisfactory. A better appreciation of the February figure can be obtained on the basis of the rate of exports per working day—£0·3 million. This compares with an average rate of £0·28 million in the last quarter of 1947.

Exports of electrical goods and apparatus, i.e., excluding machinery, amounted in value to £4·9 million in February, and it is noteworthy that wires and cables represented nearly a third of this total, being maintained at the high

Table I.—Electrical Exports and Imports

Class	Exports			Imports		
	February, 1948	February, 1947	Monthly Av., 1938	February, 1948	February, 1947	Monthly Av., 1938
	£	£	£	£	£	£
Telegraph and telephone wires and cables (submarine)	77,156	40,382	17,289			
Ditto, not submarine	498,708	178,740	71,803			
Wires and cables, rubber insulated	345,096	297,858	117,533			
Ditto, cotton, silk or artificial silk insulated	50,716	31,119	†	9,952	6,582	31,246
Ditto, enamel, glass or asbestos insulated	29,716	21,652	†			
Ditto, paper insulated	451,750	178,928	103,457			
Ditto, other	88,717	56,881	49,799			
Commercial radio apparatus	286,526	85,398	28,296	18,191	26,228	58,018
Domestic radio apparatus	208,702	360,587	36,755			
Telegraph, telephone and signalling apparatus	697,651	560,945	242,716	1,616	2,330	9,243
Other radio, etc., apparatus	243,699	184,494	57,848	—	—	—
Radio valves	134,402	104,918	41,272	18,579	19,573	10,893
Electric carbons, furnace	*	*	*	25,060	25,359	4,054
Ditto, other	*	*	*	3,303	2,917	2,301
Electric lamps, not exceeding 24 V	18,547	19,306				
Discharge lamps	20,920	5,255	49,440	4,697	3,343	10,265
Other lamps	74,692	61,955				
Other lighting apparatus	330,220	189,363	48,565	9,601	4,307	38,662
Primary batteries	37,664	34,569	13,572	*	*	*
Accumulators for motor vehicles	148,549	84,640	16,418	*	*	*
Ditto, traction	17,273					
Ditto, radio	2,650	24,305	12,456	*	*	*
Other portable accumulators	53,210					
All other accumulators	49,610	25,908	19,773	*	*	*
Parts and accessories	61,989	47,555	—	*	*	*
Cooking apparatus and elements	134,561	48,577	16,600	*	*	*
Heating apparatus and elements	84,959	125,831	14,064	*	*	*
Other parts and accessories	26,970	11,865	—	*	*	*
Commercial electrical instruments	95,049	61,601	15,878			
House service meters	136,071	52,445	15,791	17,925	11,968	32,057
Other electrical instruments	72,492	28,114	9,612			
Electro-medical apparatus (not X-ray)	25,402	9,660	3,038	*	*	*
X-ray apparatus, tubes and parts	27,711	34,741	4,881	38,207	7,857	9,734
Insulating cloth and tape	46,515	26,078	7,038	*	*	*
Other insulating materials	89,705	66,403	12,305	*	*	*
Unclassified goods and apparatus	265,478	152,182	108,085	19,583	18,209	56,529
Generators, up to 200 kW	230,122	117,019	38,071	*	*	*
Ditto, over 200 kW	122,955	437,241	119,079	*	*	*
Ditto, parts	162,214	237,244	—	*	*	*
Motors, railway and tramway	12,896	498	15,977			
Ditto, other, up to ¼ h.p.	45,476	28,575	9,001			
Ditto, from ¼ to 1 h.p.	32,677	13,084	2,470	25,169	11,303	26,033
Ditto, from 1 to 250 h.p.	272,140	219,736	96,637			
Ditto, over 250 h.p.	20,294	23,471	20,960			
Ditto, parts	56,193	36,014	—			
Converting machinery	3,557	1,043	101,304			
Transformers, including coils	398,771	190,307				
Rectifiers for power house use	23,650	14,493	3,463	98,086	6,865	14,455
Motor starting and controlling gear	120,334	63,959	50,866			
Switchgear and switchboards (not telegraph or telephone)	519,483	173,724	184,533			
Other electrical machinery	34,141	15,982	15,497			
Vacuum cleaners and parts	137,206	121,364	26,662			
Other electrically-operated portable appliances	46,924	15,313	10,394	2,307	6,424	24,627
Total	7,172,110	4,921,322	1,829,198	292,276	153,265	328,117

* Not classified separately. † Not separately distinguished in 1938.

January level of 8,600 tons—more than 20 per cent above the October-December average. Contrasted with the expansion of cable exports, those of radio receiving sets dropped suddenly to only half of the 1947 average, the number sent abroad in February (17,199) being the smallest for nearly two years. Consignments of commercial radio equipment (transmitters for public broadcasting and television, and radio communication and navigational aid, including radar) were, however, substantially higher than last year (£286,526 compared with only £56,881) and they also exceeded the January total.

Table II.—Distribution of Exports of Electrical Goods and Apparatus

Destination	February, 1948	February, 1947	Monthly Av., 1938
	£	£	£
Eire	243,686	204,021	37,726
Channel Islands	33,282	23,209	12,177
Malta and Gozo	27,658	4,160	5,873
Cyprus	18,888	11,139	1,373
Palestine	34,094	80,214	8,426
British West Africa	67,034	49,136	12,889
Union of South Africa	721,621	302,867	162,584
Southern Rhodesia	52,997	26,938	9,632
British East Africa	58,697	14,469	7,893
India, Pakistan, etc.	353,089	478,381	123,789
British Malaya	142,136	180,633	32,792
Ceylon	35,429	31,892	15,048
Hong Kong	46,699	41,463	12,939
Australia	631,266	173,783	197,366
New Zealand	288,062	147,185	96,225
Canada	38,248	27,556	12,547
British West Indies	31,339	29,719	12,954
Anglo-Egyptian Sudan	18,485	25,385	2,989
Other British Countries	110,901	19,901	11,030
Soviet Union	27,529	2,428	36,781
Finland	25,146	5,206	5,969
Sweden	271,573	83,537	14,948
Norway	63,494	88,488	12,881
Iceland	11,686	31,237	2,796
Denmark	62,719	88,082	18,907
Poland	12,581	1,649	9,702
Netherlands	136,834	66,590	22,010
Belgium	59,933	102,251	11,208
France	55,549	31,795	16,082
Switzerland	28,439	32,368	3,768
Portugal	176,766	35,428	6,512
Spain	41,852	13,881	3,813
Czechoslovakia	21,373	19,965	7,205
Yugoslavia	39,649	10,867	1,475
Greece	19,846	38,653	4,926
Turkey	69,654	43,941	7,684
Dutch East Indies	9,255	12,945	2,692
Dutch West Indies	14,209	11,142	830
Portuguese East Africa	10,341	6,017	6,942
Lebanon	8,780	15,550	—
Egypt	59,367	74,085	13,176
Iraq	106,852	46,986	5,530
Iran	79,867	43,644	16,345
Burma	42,436	55,881	5,337
China	67,921	153,211	4,116
United States of America	13,077	10,400	5,839
Mexico	4,449	4,458	1,466
Colombia	11,310	5,490	845
Venezuela	48,666	40,042	2,936
Chile	71	20,861	6,635
Brazil	64,721	13,341	11,164
Uruguay	31,760	12,215	1,790
Argentine Republic	140,761	23,795	45,452
Other Foreign Countries	140,999	93,775	40,270
Total	4,933,076	3,212,255	1,134,284

Among electrical machinery exports, those of generating plant at £515,291, were less than a year ago while motors (£439,676) showed some advance, but the greatest expansion continues to be in switchgear with a value of £519,483 against £184,533 in February, 1947. An analysis of the destinations of exports of electrical machinery other than motors and generators, indicates that considerable quantities were sent to Russia (£130,501 against £4,824 a year ago).

Imports of electrical equipment in February were a little above the level of a year ago but were less than the average in the last quarter of 1947. Of the total of £166,714 in the goods and apparatus section, imports to the value of £81,912 came from the United States.

French Electrical Trade

THE recent preliminary official returns of French foreign trade show that on balance France is an importer rather than an exporter of electric power plant but an exporter to a greater extent than an importer of switch and control gear and radio apparatus. The principal items of electrical goods imported during 1946 are shown below.

IMPORTS

	Fr. (000)
Dynamo-electric machines and transformers	499,640
From Germany	52,720
„ *Great Britain*	116,350
„ *Switzerland*	120,190
„ *United States*	30,860
Switch and control apparatus	160,000
From Switzerland	68,000
„ *Great Britain*	14,000
„ *Belgium*	8,000
„ *United States*	27,000
Electric welding apparatus	73,700
Telegraph and telephone apparatus not elsewhere specified	19,000
Automatic telegraph apparatus	20,400
Radio apparatus except valves imported separately	60,600
Measuring apparatus except meters	15,200
Electro-medical apparatus	33,000
Electric heating material	34,300
From Germany	11,600
„ *United States*	13,800
Domestic refrigerators (elec.)	10,400
Unspecified electrical apparatus	50,600
Dynamos and lighting apparatus for i.c. engines	7,021

The leading French electrical exports during 1946 were (valued in thousands of francs):—Dynamo-electric machines and transformers, 246,000; switch and control apparatus, 240,000; telegraph and telephone apparatus, 40,000; radio apparatus, 287,000; heating apparatus, 95,000.

Conference on Liquid Fuels

The Institute of Petroleum and the Institute of Fuel are to hold a joint conference on "Modern Applications of Liquid Fuels" at Birmingham University from 21st to 23rd September, 1948, together with an exhibition.

COMMERCE and INDUSTRY

Cheaper Water Heaters.

IN accordance with the request of the Chancellor of the Exchequer and in implementation of the recommendations of the Federation of British Industries, the Electric Water Heater Manufacturers' Association announces the following price reductions in respect of its members' products: Electric thermal storage heaters up to and including 30 gal. capacity, 5 per cent; thermal storage heaters over 30 gal. capacity, 10 per cent; immersion heaters and circulators up to and including 3 kW, 7½ per cent. There will be no change in the prices of immersion heaters and circulators of over 3 kW.

These reductions will be applied to goods despatched by the manufacturers on and after 1st April.

I.M.E.A. Winding-Up

An announcement in the *London Gazette* of 23rd March states that at an extraordinary general meeting of the Incorporated Municipal Electrical Association on 18th March a resolution was passed that the Association should be wound up voluntarily, and that Mr. G. W. Wilks, of 4B, Frederick's Place, London, E.C.2, should be appointed liquidator. The notice is formal; all debts have been, or will be, paid in full.

Manufacturers' Handbook

Over 4,000 British manufacturers are members of the National Union of Manufacturers, 6, Holborn Viaduct, E.C.1, a fact which makes the Union's handbook a useful work of reference. The latest edition is prefaced with information regarding the Council, committees and area organizations. The body of the book is in two parts—an alphabetical list of members, with their addresses, telephone numbers and brief particulars of their products, and a classified section under a wide variety and large number of headings. The handbook is circulated to members as well as to commercial diplomatic officers and other important overseas "contacts."

E.D.A. Public Speaking Competition

The national finals of the British Electrical Development Association's first post-war public speaking competition took place in the Institution of Electrical Engineers on 18th March. Of the eleven candidates six chose as the subject of their address "Electricity as an Aid to Farming." The competition was judged by the Dowager Lady Swaythling, president of the Electrical Association for Women; Mr. Harold Purcell, the playwright; and Mr. E. W. Bussey, member of the British Electricity Authority. Winners were :—Women—1, Miss M. P. Binks (Wessex Electricity Co.); 2, Miss M. Mawer (Lincoln Electricity Dept.); and 3, Miss J. E. Thomasson (West Midlands J.E.A.). Men—1, Mr. C. Druce (Harrogate Electricity Dept.); 2, Mr. J. P. Cowan (Wessex); and 3, Mr. I. J. McRobert (London & Home Counties J.E.A.). Mr. Purcell remarked that the standard of speaking was of a very high order throughout.

Liquidation of I.M.E.A.

Television Interference Suppression

Pending the introduction of legislation, the Radio Industry Council is launching a campaign to persuade vehicle owners to take steps to minimize the interference with television reception caused by the ignition systems of cars and lorries. Associated Iliffe Press, many of whose journals are connected with the automobile, radio, television and electrical industries, has set an example by arranging for the fitting of suppressors to all its vehicles, including the vans belonging to Cornwall Press, Ltd. With staff cars, altogether 70 vehicles will be equipped with suppressors.

Cyprus Tariff Revision

Details have been published in the *Board of Trade Journal* of the revised Customs tariff in Cyprus under the Customs (Amendment No. 2) Law, 1948. Electrical goods and appliances appear at 20 per cent ad valorem (preferential) and 28 per cent (general tariff).

Electricity Stock Regulations

The Electricity (Stock) Regulations, 1948 (S.I. 1948 No. 526 (H.M. Stationery Office, 4d.), make provision for the issue, transfer, dealings in and redemption of British Electricity Stock.

No Load Shedding at Southend

Speaking at the annual dinner of the Southend Branch of the Electrical Contractors' Association, Mr. R. C. Golding, borough electrical engineer, said that Southend was one of two towns in the country which had not had compulsory electricity cuts during the past winter. With regard to criticism of the undertaking's sales policy, he said that it had not affected the peak loads and they would try to continue it for another twelve months to show other undertakings in the country what could be done. A presentation of an inscribed silver salver was made to Mr. D. W. Spendlove, chairman of the branch for seven years.

Turbo-Alternator Sets for Export

The Crown Agents for Northern Rhodesia have placed with the Brush Electrical Engineering Co., Ltd., as main contractors, an order valued at over £100,000 for the bulk of

the equipment for the power station of a cement factory which is being constructed at Chilanga and for which the consulting engineers are Henry Pooley, of London. The contract comprises a 1,500-kW, 3·3-kV Brush-Ljungstrom radial-flow double-rotation turbo-alternator set to operate with steam at 230 lb per sq in. and 725 deg F (16·17 kg per cm² and 385 deg C)—altitude of site 4,200 ft (1,280 m) above sea level—together with twin John Thompson boilers, one 400-kW Petter-Brush diesel-driven alternator set for standby purposes, h.v. and l.v. switchgear, auxiliary transformers and a 10-ton overhead travelling crane.

An order has also been received from Merz & McLellan (South Africa), consulting engineers, on behalf of the Electricity Supply Commission of South Africa for a 7,500-kW Brush-Ljungstrom radial-flow double-rotation turbo-alternator for the Commission's West Bank power station, East London, to operate at 200 lb per sq in. and 750 deg F (14·06 kg per cm² and 343 deg C). Two similar sets were commissioned in 1940 and 1945, and with this third set the total capacity of the station (all Brush-Ljungstrom) will be 32,500 kW.

Large Synchronous Condensers for New Zealand

The accompanying illustration shows one of five B.T.H. 30,000-kVA, 750-r.p.m. synchronous condensers ordered by the New Zealand Government Hydro-Electric Department. These machines operate on 11 kV, three-phase, 50-cycle supply and will be used for the voltage regulation of incoming transmission lines. The machines are each complete with air cooling and water cooling equipment. The order also includes the 11-kV solenoid-operated switchgear and neutral earthing cubicles, control panels, relay panels, temperature indicating apparatus, and voltage regulating equipment for use with the condensers. The switchgear and control gear are arranged so that the whole sequence of starting operations is carried out under automatic control following operation of a pilot-operated switch. Provision is also made so that the starting sequence can be carried out by manual operation of the switches. Two of the machines have been shipped, the third one (illustrated) is seen in the B.T.H. Rugby Works, after test and just before shipment.

B.T.H. 30,000-kVA synchronous condenser ready for shipment to New Zealand

To Our Readers

Our readers are well aware of the difficulty which our publishers have in dealing with the applications for copies of *Electrical Review* which paper limitations make it impossible to meet.

Readers who change their address or that of their newsagents as a result of new appointments are reminded of the necessity to see that arrangements are made for their copies to continue to reach them.

E.T.U. Conference

The annual conference of the Electrical Trades Union is to be held at Great Yarmouth from 10th to 14th May.

Fluorescent Street Lighting

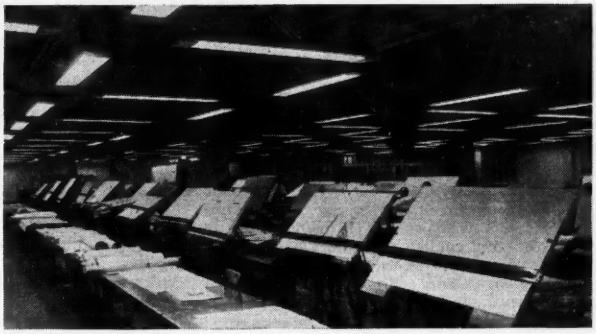
The General Electric Co., Ltd., has started work on a street lighting scheme comprising over 400 points which will virtually re-light the whole of Romsey, Hants. The first mile-long section, which has just been completed, covers the main road through the centre of the town and comprises 45 points, using G.E.C. main road lanterns fitted with 140-W "Osram" sodium lamps. A feature of this part of the scheme was the speed at which it was carried out, each column and ready-wired lantern being erected in one piece by three workmen using a crane, and the whole installation, including all the preliminary work, was completed in less than two weeks. The lanterns, of die-cast light alloy with sealed prismatic refractor plates, are mounted on type 3 DN columns supplied by Concrete Utilities, Ltd. These columns have a small base specially designed to take up as little room as possible on narrow pavements. The remainder of the scheme, which is likely to be spread over a number of years and is subject to Ministry of Transport approval, will comprise approximately 200 sodium and 200 filament lamps.

Three fluorescent street lighting installations, planned by the British Thomson-Houston Co., Ltd., recently came into operation at Leamington Spa, Wolverhampton and Worcester. In The

Parade, Leamington, ten "Mazdalux" fluorescent street-lighting lanterns, each accommodating three "Mazda" 80-W "warm-white" fluorescent lamps, are mounted on existing standards placed along the centre of the roadway, at a height of 25 ft (7·5 m). Similar lanterns have been installed in North Street, Wolverhampton and Deansway, Worcester.

Drawing Office Lighting

The drawing office of Morris Motors, Ltd., Cowley, has recently been re-lighted by 80-W "Daylight" fluorescent units with excellent results. Some 250 fittings were used, applied in rectangular formation at 9 ft from floor level, suspended on a conduit grid which was also used as a means of wiring distribution. The resultant illumination value is 28 lumens per sq ft, with very little variation and an entire absence of shadow. The vertical draughting boards were separately treated in order to avoid any shadow on the edges of instruments, and a very even illumination resulted. The scheme was planned and installed by Hill, Upton & Co., Ltd., of Oxford, Revo "Trufolite" fittings being employed with G.E.C. "Osram" 80-W tubes.



Fluorescent lighting in the drawing office of Morris Motors Cowley Works

Export Promotion Department

As from 3rd April the address of the Export Promotion Department of the Board of Trade will be Thames House North, Millbank, London, S.W.1. The telephone number will still be Victoria 9040 but the telegraphic address is being changed to "Advantage London."

Brighter Exports

A display, "How Paint Helps Exports," designed to assist industrialists in "re-grooming" their products for overseas markets, will be opened at the Grand Hotel, Birmingham, on 5th April, by Sir Ernest Canning, chairman an managing director of W. Canning & Co., Ltd. The display, which is presented by the Paint Division of I.C.I., will be open from 5th to 9th April.

Batti-Wallahs' Luncheon

An interesting talk on the work of sappers during the war was given by Lt. Gen. Sir Charles J. S. King, K.B.E., C.B., at the monthly luncheon of the Batti-Wallahs' Society last week at the Connaught Rooms, London. Sir Charles first spoke of the importance of bridging in mechanized warfare and then referred to the special forms of airfield construction used, the work of bomb disposal and mine detection. The speaker was accorded a vote of thanks on the proposition of Mr. J. Temple Hazell. The next luncheon will be held on 29th April when the speaker will be Mr. John Terry, of the Royal National Lifeboat Institution.

High-Voltage Cables

Design, manufacture, installation and testing of solid, oil-filled and impregnated-pressure power cables and their accessories for working voltages from 33 to 132 kV are covered comprehensively in a book of 169 pages entitled "High-Voltage Cables," which was published yesterday by British Insulated Callender's Cables, Ltd. The contents (which are not limited to the production of a single manufacturer) include a considerable amount of technical data not previously brought together in book form for easy reference, such as current rating, losses, electrical constants, weights and dimensions of the three main types of high-voltage cables; these are presented in 70 tables. The 95 pages of text (nine chapters), in addition to the more general aspects mentioned above, deal with operation, lead-sheath problems, surges and fault location. There are 58 line drawings and diagrams and 24 plates on transparent plastic paper, which show in clear detail the methods of construction of the cables. The production of this limited edition, priced at £3 3s., is most attractive.

G.E.C. Cookery Book

Recipes prepared to suit present-day conditions and including only those ingredients which are generally available are contained in the "G.E.C. Cookery Book," published by the General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2, at 2s. 6d. net. The book is primarily intended for use with

the DC113 cooker, which is illustrated and the parts explained in detail, but in general the instructions and recipes are applicable to any G.E.C. cooker heated from the sides and bottom.

Contractors' Silver Jubilee

H. Beney & Sons, Ltd., Eastbourne, have produced a well-illustrated 12-page brochure to mark the company's completion of twenty-five years in the electrical contracting and retailing business.

Palestine Electrical Imports

During the nine months ended 30th September last electrical goods and apparatus to the value of £P1,348,087 were imported into Palestine, as compared with £800,037 in the corresponding period of 1946.

Trade Announcements

Taylor Electrical Instruments, Ltd., state that in future radio test equipment, manufactured by them will be sold under the name of " Windsor " instead of " Taylor ", with a plate bearing the name of Taylor Electrical Instruments, Ltd. This change is being made in order to avoid conflict with the Taylor Instrument Company of America with which the company has no connection.

RCA Photophone, Ltd., state that in future inquiries regarding RCA (Radio Corporation of America) engineering products will be handled by the Engineering Division of RCA Photophone, Ltd., under the direction of Mr. H. J. O'Dell, at its head office, 43, Berkeley Square, London, W.1.

Clang, Ltd., have appointed Mr. M. A. Higham, of 32, Worcester Crescent, Mill Hill, London, N.W.7, as representative for London and the Home Counties.

Rival Lamps, Ltd.—The address of the company is now Hamm Moor Lane, Weybridge, Surrey (telephone: Weybridge 3226/8).

The Mercury Discharge Lighting Co., Ltd., has moved to Mercury House, 186, Seven Sisters Road, London, N.7 (telephone: Archway 2513).

Trade Publications

Goodmans Industries, Ltd., Lancelot Road, Wembley, Middx.—Technical leaflet describing public address equipment.

Brook Motors, Ltd., Empress Works, Huddersfield.—Brochure illustrating the manufacture of fractional h.p. motors.

Nife Batteries, Redditch.—Leaflet (4047) on miner's headlamp and battery.

General Lighting Equipment Co., Ltd., 99, Great Eastern Street, London, E.C.2.—Priced catalogue of domestic lighting fittings.

Herman Smith, Ltd., Reliance Works, Dudley, Worcs.—Leaflet giving details of reduced prices of fluorescent lighting fittings and control gear.

Trade Marks

RECENT applications for the registration of trade marks include the following, objections against which may be entered within a month from the dates stated:—

17th March

AMPLIVOX. No. 649,638. Class 9. Complete radio receiving sets and telephone instruments.—Amplivox, Ltd., 2, Bentinck Street, Manchester Square, London, W.1.

SYNCYCLE (design). No. 652,373. Class 9. Electrical convertors and transformers.—Telephone Manufacturing Co., Ltd., Hollingsworth Works, Martell Road, East Dulwich, London, S.E.21.

WALCO. No. 647,392. Class 11. Electric grills, plate warmers, and stoves and electrically heated kitchen utensils included in Class 11.—Wall's, Ltd., 202, Fazeley Street, Birmingham, 5.

OMEGA. No. 654,558. Class 11. Electric fires.—Sigma Electrical Manufacturing Co., Ltd., Quadrant Works, Sheepcote Street, Birmingham, 15.

24th March

METROLOCK. No. 666,596, Class 7. Electric generators and motors (other than electric motors for land vehicles).—Metropolitan-Vickers Electrical Co., Ltd., 1, Kingsway, London, W.C.2.

ECWELITE. No. B653,681, Class 9. Electric current rectifiers.—Western Electric Co., Ltd., Liberty House, Regent Street, London, W.1.

CHRONOTRON. No. 655,865, Class 9. Electric time-measuring instruments.—Electronic Instruments, Ltd., 17, Paradise Road, Richmond, Surrey.

VIDOREX. No. 656,105, Class 9. Radio apparatus, gramophones, batteries, cases for electric pocket lamps, electric flat irons, vacuum cleaners, electric signs and electric cooking utensils included in Class 9. Also No. 656,106, Class 11. Heating, cooking, refrigerating and lighting apparatus, all operated by electricity or gas; and electric torches, pocket lamps, electric cooking utensils included in Class 11, automatic gas lighters and airing apparatus.—Vidor, Ltd., 681, Salisbury House, Finsbury Circus, London, W.C.2.

FLAME-OTROL. No. 656,345, Class 9. Electronic apparatus for controlling automatically the combustion conditions in furnaces by regulating the fuel supply.—Ether, Ltd., Tyburn Road, Erdington, Birmingham, 24.

SURF (design). No. 650,861, Class 11. Portable electric heaters, each in combination with an electric fan.—G-M Laboratories, Inc., Chicago. Address for service: c/o F. B. Dehn & Co., 103, Kingsway, London, W.C.2.

HARTZELL (design). No. B653,189, Class 11. Fans included in Class 11.—Hartzell Industries, Inc., Ohio. Address for service: c o Forrester, Ketley & Co., 88/90, Chancery Lane, London, W.C.2.

Production for Export—III

Special Fires for the American Market

IN the past British electrical manufacturers have been rather inclined to adopt the attitude that apparatus designed for the home market must *ipso facto* be equally suitable for overseas. While this may be generally true for most electrical machinery it is by no means the case for all types of current consuming apparatus, particularly domestic appliances. That this fact is now beginning to be recognized is evidenced by the very considerable amount of on-the-spot study of local market requirements on the particular tastes. Yet Berry's Electric, Ltd., are now finding it worth while to produce special export models for individual markets. The most striking instance of this is to be seen in the case of " Magicoal " fires designed for the United States. Three special models were produced early last year and following a visit to America by Mr. Raymond Berry, the chairman and managing director, four more types were added to the range. Several of these models are to be seen in the illustrations shown above.

Taking the United States as a whole, there is comparatively very small demand for electric fires, most houses being centrally heated to a degree which makes supplementary heating unnecessary. The average American, however, is as partial to the appearance of a coal fire as the Englishman. This may account for the strange

Assembling " A7 " fires for the American market. (Right) Finishing a batch of " Hillberry " fire frames for Australia

part of manufacturers interested in export.

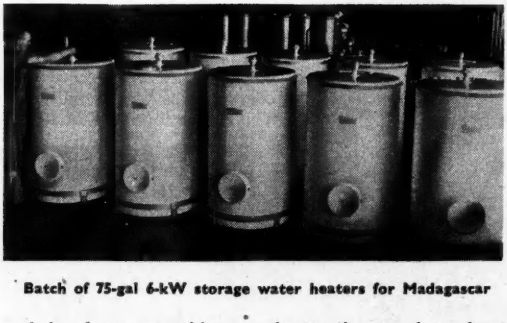
Among domestic appliances it might be thought that the electric fire offered little scope for foreign buyers to indulge their own

phenomenon that a large percentage of American homes are equipped with fireplaces and all the accoutrements of the fireside, though actual coal or logs are rarely burnt in them. It is in these circumstances not surprising that "Magicoal" fires have enjoyed much popularity in the States and have sold well there for over twenty years, without serious local competition. The highly specialized nature of this product does not lend itself to American production methods.

Importance of Appearance

While there is a limited sale for period basket type fires of the luxury class, the main demand is apparently for models of imposing appearance yet of quite light construction. Since central heating is the normal method of warming one's home, the provision of heating elements is a consideration secondary to the appearance and in most of the models they are omitted from the design altogether. Where elements are incorporated the loading is kept down to 1,300 W so that the apparatus can be used on the 12-A 110-V lighting outlets commonly installed.

Long life, a quality on which British manufacturers have always prided themselves, is not considered, the demand being for inexpensive apparatus lasting, say, only a couple of years before needing replacement. This may appear uneconomic to British eyes but it is nevertheless no exaggeration. Consequently, Berry's have adopted a much lighter construction than they use normally and they have not paid so much attention to permanence of the finish.



Batch of 75-gal 6-kW storage water heaters for Madagascar

As a result of these economies it has been possible to reduce production costs very considerably—an essential prerequisite to competing in the American market where high freight charges, import duties and exceptionally generous scale of discount (a department store will not work on less than 50 per cent and a distributor on less than 30 per cent) raises the selling price to 6½ times the works cost.

Large orders for 60-A aluminium switch fuses, here seen being assembled, are in hand at present for various places abroad, including Iran, South Africa and India

Elsewhere throughout the world the company's standard fires find a ready market and it is claimed that they have been sent to practically every country in the world. Here again, however, slight modifications are necessary to meet individual countries' safety regulations regarding double-pole switching, guards, etc. In this respect British manufacturers are at a serious disadvantage in there not being any generally accepted safety regulations laid down in this country. If only fires conformed to *some* standards they would probably be acceptable abroad but, failing this, overseas buyers will naturally continue to demand that apparatus should conform to their own or other countries' safety requirements.

The largest purchases of "Magicoal" fires have been made by Australia and Iceland, but sales to the latter have recently terminated through import restrictions. Other Empire countries, Belgium, Switzerland, Turkey, Portugal and the Middle East have also taken considerable deliveries. Chile is the

only one of the South American countries for which it has been possible to obtain import licences. Indeed at the moment three-quarters of the world market including many of the largest potential customers are through import and other restrictions virtually closed for this class of goods. Big plans for Canada and India are held up.

The insufficiency of licences for home production (the company is now allowed to make for home sale only one-eighth of the number made before the war), besides having the effect of forcing up prices, is making it difficult to bring out new designs; for although special export models may be produced they generally follow home designs.

In addition to fires the company is also sending abroad a considerable number of water heaters and lighting fittings. Particularly good business is being done with decorative glassware which is now being produced in England more cheaply and of better quality than that obtained before the war from Germany and Czechoslovakia. The company's Switchgear Department is also contributing substantially to the export drive, switch-fuses of aluminium being particularly in demand.

Though erratic supplies of materials are still severely handicapping production, between five and six times as many goods as before the war are now going abroad.

ELECTRICITY SUPPLY

Street Lighting Schemes. Fulham Grit Nuisance.

Bedford.—ALTERATION OF COOLING SYSTEM.—For the first half of the new power station it was originally proposed to use the River Ouse for the circulating water system. For the second half it was considered necessary to install a cooling tower for use when the flow of water in the river was insufficient. It is now proposed to install a cooling tower also in connection with the first section of the station.

Chester.—FARM SUPPLY.—The Corporation is to supply electricity to the Kennels Farm, Eaton Park at a cost of £2,123.

Durham.—MINISTRY AND STREET LIGHTING.—The City Council has been informed by the Town Clerk (Mr. G. R. Bull) that as the law stands at present, neither the Ministry of Fuel and Power nor the Ministry of Transport, has powers to enforce local authorities to reduce street lighting to 50 per cent of the pre-war standard.

Fulham.—GRIT FROM POWER STATION.—A town's meeting at Fulham last week unanimously passed a resolution "viewing with concern and alarm" a Government decision not to allow the Borough Council to install grit-arresting plants at the power station. A deputation to be led by the Mayor, Councillor J. T. Horton, who called the meeting was appointed to seek an interview with Sir Stafford Cripps with the object of trying to persuade him to reverse his decision that owing to steel shortage, work on the grit-arresting installation should cease.

REBATE HALVED.—The 20 per cent rebate for prompt payment of electricity accounts is to be reduced to 10 per cent.

Hammersmith. — HIGHER CHARGES. — In December, 1946, electricity charges were reduced from 25 to 15 per cent above the pre-war level. In view, however, of the estimated deficiency of £66,315 in 1948-49, the Electricity Committee has recommended an increase in tariff, as from 1st April, which will in general bring them again to approximately 25 per cent above pre-war charges.

Heston and Isleworth.—SUPPLY TO ESTATE.—The Council is to supply electricity, at an estimated cost of £3,045, to 75 houses proposed to be erected on the Beavers estate.

Kidderminster.—LIGHTING OF MARKET.—The Corporation is asking the Minister of Health for permission to install electric lighting in the Retail Market (£1,310).

Lancashire.—HOSPITAL INSTALLATIONS.—The County Council is applying for sanction to a loan of £10,250 for heating and electrical installations at the County Hospital, Wrightington.

Lewisham.—ELECTRIC DISCHARGE LIGHTING.—The Borough Council proposes to replace high pressure gas lighting in a portion of Lewisham High Street and Rushey Green by electric discharge lamps (£1,475).

London.—EXTENSION SCHEMES.—Among the matters notified in the report of the Technical Committee of the London and Home Counties J.E.A. presented on Wednesday were the following:—Construction of the third section of the Brunswick Wharf generating station, Poplar, at an estimated cost of £6,127,000; extension of the Canning Town generating station, West Ham, at a cost of £978,968; laying of four 22-kV transmission mains by the London Power Co. in Elizabeth Street and Ebury Street, Westminster (£70,000); and laying one 22-kV cable by the Metropolitan Electric Supply Co. from North Hyde to East Bedfont (£61,000).

Maidstone.—NEW MAINS.—E.h.v. mains are to be laid in the Bearsted, Leybourne and Malling districts at an estimated cost of £6,700.

STREET LIGHTING.—A proposed scheme for improved street lighting in Sutton Road is estimated to cost £520.

Portland.—STREET LIGHTING CONVERSION.—The U.D.C. has approved in principle a scheme for the conversion of 177 gas street lamps to electricity, at an approximate cost of £3,060.

Reading. — HOUSING DEVELOPMENT. — The Electricity Committee has approved proposals for supplying electricity to 246 houses to be erected at Emmer Green, at an estimated cost of £9,790.

Sunderland.—FARM SUPPLIES.—The Town Council is to spend £300 on laying electric cable to Cherry Knowle Farmhouse and £165 on electrical wiring of farm buildings.

NEW CABLES.—The laying of electric cables across Hendon Junction dock gateway will cost £575.

Watford.—SUPPLY EXTENSION SCHEME.—The Electric Lighting and Power Committee has authorized the submission to the Eastern Electricity Board of a scheme for the supply of electricity to the Hemel Hempstead New Town and recommends the seeking of sanction to borrow £75,000.

Wimbledon.—STREET LIGHTING IMPROVEMENTS.—The Minister of Health has sanctioned the borrowing by the Council of £2,641 for street lighting improvements in Haydon's Road.

Overseas

Eire.—STREET LIGHTING IN DUBLIN.—The Dublin Planning and Streets Committee has authorized the restoration of all street lighting in the city to the pre-war standard as from next September. According to the city manager, a plan to modernize the equipment which is to be carried out at a cost of some £300,000 will take about seven years to complete.

Pakistan.—ACCELERATING HYDRO - ELECTRIC DEVELOPMENT.—The Mianwali hydro-electric project in West Punjab, capable of generating 26,000 kW, and the Karnafulli project in East Bengal, with a capacity of 60,000 kW, should be started immediately and completed in the shortest possible time, it was urged at an industrial conference in Karachi recently. A statutory electricity authority to plan, survey and design both hydro-electric and thermal projects was also considered in detail.

Russia.—HYDRO-ELECTRIC STATION STARTED.—Work has begun on a large new hydro-electric power station near Gorky, on the river Volga. About 30,000,000 cu m of earth will have to be moved, about twice as much as at the Dnieper Dam. The Gorky Dam will be nearly seven miles long.

Spain.—ELECTRICITY OUTPUT.—Official figures relating to production of electricity in Spain, the Canary Islands and African possessions in the first half of last year give a total of 2,789 million kWh, of which 277 million kWh was produced by thermal and the remainder by hydro-electric plants. The total for the whole of 1946 was approximately 5,300 million kWh. The new hydro-electric power station at Flix in the Pyrenees is intended to produce an additional 200 million kWh annually, largely for the industries of Catalonia.

TRANSPORT

France.—MAIN LINE ELECTRIFICATION.—The railway line linking Paris with Marseilles is to be electrified as far as Lyons within two years. This is the first step in a 10-year modernization plan giving French railways 3,500 miles of electrified lines.

London.—NEW TUBE SIGNALLING.—Re-signalling between Wood Green and Hammersmith will make it possible to increase services on the Piccadilly line during rush hours by 15 to 20 per cent. It is hoped to complete the work by 1950.

Newcastle-on-Tyne.—TROLLEY-BUS ROUTE.—The City Council's new trolley-bus service between Newcastle and Gosforth is to start early in April and will replace the trams at present running on the route.

B.E.A. Bulk-Supply Tariffs

Temporary Arrangements

PENDING determination of tariff policy by the British Electricity Authority in regard to bulk supplies to the fourteen Area Boards, interim tariffs have been introduced to take effect on 1st April. The tariffs are calculated to cover the Authority's revenue expenditure on generation and main transmission to the Areas. They have a uniform basis, but in order to avoid abrupt changes in costs to the individual Boards, compared with those that would have been paid by the various undertakings under the previous organization of the industry, discounts or surcharges will be allowed for both kW and kWh but not for the fuel-cost variations.

The kW charge is £3 10s. per kW of maximum demand (half-hourly basis) at each point of supply, and the running charge 0·335d. per kWh. The fuel-cost variation is 0·0007d. per kWh for each penny by which the cost of coal of 11,000 B.Th.U. calorific value is above or below 38s. per ton.

The following Areas will pay percentage additions:—London, 3; South Eastern, 7; Southern, 6; South Western, 5; Eastern, 1; South Wales, 10; Merseyside and North Wales, 3. The following Areas will be allowed deductions from the tariff:—Yorkshire, 2; North Eastern, 7; South-East Scotland, 4; South-West Scotland, 8. The East Midland and North Western Areas will pay the plain tariff.

FINANCIAL SECTION

Company News. Stock Exchange Activities.

Reports and Dividends

Mather & Platt, Ltd., held their annual meeting recently, when Mr. H. Taylor, who presided in the absence of Mr. L. E. Mather (chairman), read Mr. Mather's speech. In this Mr. Mather said that the increase of £238,000 in the trading profit was due to a larger turnover, despite a bad start at the beginning of the year, which was to the credit of all concerned. With regard to overseas trading, customers in South America were concerned at the long periods required for manufacture of urgently wanted machinery and equipment. They were maintaining their position in South Africa, India and Pakistan. For the present many of their products carried priority under Government schemes for improving the national situation.

The Bournemouth & Poole Electricity Supply Co., Ltd., held its final annual meeting on 23rd March when Sir Robert Renwick (chairman), who presided said that company was one of the oldest of the supply companies and traced its origin back to 1888. The capacity of the first generating set was 10 kW, while the new generating station now in course of construction would have a capacity of 200,000 kW, which was the epitome of the company's progress.

The Metropolitan Electric Supply Co., Ltd.—Presiding at the annual meeting recently, Major H. Richardson (chairman and managing director) said that 1947 was the last full year's trading. The three weeks' prohibition of consumption of electricity for industrial purposes, brought about by the fuel crisis and the steps taken to keep the load within the capacity of the available generating plant in the country had affected adversely the company's sales. The total sales by their group of undertakings amounted to 834 million kWh, only 14 million kWh more than in 1946. Major Richardson concluded with a brief review of the progress of the company.

The Midland Counties Electric Supply Co., Ltd.—Presiding at the recent annual meeting, Mr. W. Shearer referred to the compensation basis under the 1947 Electricity Act, which he described as unfair, particularly with regard to their traction undertakings, the revenues from which were largely ploughed back into that section of their business, thus avoiding, to a considerable extent, new issues of capital for its development. The output of their three generating stations during 1947 was slightly lower than in the previous year, due in some measure to the fuel crisis and partly because of some necessary adjustments to certain units at Spondon and Avon, which put them out of commission for a time. Work was proceeding at the new station at Staythorpe. The direction received for the fourth 60,000-kW set to complete two thirds of the project, the total capacity of which would be 360,000 kW, had been postponed from 1951 to 1952 in accordance with the Government's revised programme of capital expenditure.

The North-Eastern Electric Supply Co., Ltd. held its final annual meeting recently, when Viscount Ridley (chairman) said that now that the nationalization of the industry was about to become an accomplished fact, he hoped it would ultimately prove of benefit to their consumers and to the nation. There would be many difficulties in the transition period and everyone engaged in the industry should co-operate in overcoming them.

London Associated Electricity Undertakings, Ltd.—In the course of his speech at the final annual meeting Mr. C. Parker (chairman and managing director) referred to the past accomplishments of the company. The six companies' organizations existing in 1936 had been welded into a single unit, the varying tariffs had been unified and a start had been made to reduce them when the war came. In the last quarter of 1946 the directors found it possible to commence reductions once more. Good progress had been made with the standardization of the system of supply and at December, 1947, 92 per cent of the meters on consumers' premises were a.c. meters.

The Lancashire Dynamo & Crypto, Ltd., reports a profit for 1947, after charging income tax and profits tax, of £126,715, as compared with £107,446 for 1946. After deducting depreciation and directors' fees, there is a net profit of £104,125 (against £92,382), to which is added £173,193 brought in. As already announced, the ordinary distribution for the year is unchanged at 22½ per cent (including a bonus of 7½ per cent), and after placing £9,112 to reserve, a balance of £206,991 is carried forward. In a statement with the report and accounts, the chairman refers to misleading statements made on the subject of profits and dividends, and says that in a company such as theirs the actual rate of dividend declared should not be related to the nominal capital of the company, but to the actual capital invested. The total profits earned by the group only represent a very reasonable return on the true capital employed.

S. Guiterman & Co., Ltd., report a net profit of £41,787 (against £43,068), to which is added £18,774 brought in. After making various allocations, it is proposed to pay a dividend of 15 per cent, plus a bonus of 10 per cent, making 25 per cent for the year. In the

previous year the distribution was 20 per cent, including a bonus of 7½ per cent. The balance carried forward is £18,682.

The Greengate & Irwell Rubber Co., Ltd., reports a net trading profit for the year ended 24th December last of £190,864, as compared with £108,311 for the preceding year. The directors state that they are of opinion that the whole of the additional profits should be used to finance the heavy capital expenditure which has been undertaken within the limits allowed by the Government. To the profit is added £2,109 income from investments, plus £104,338 brought in, making £297,311 available. The final ordinary dividend is 1s. 3d. per share, making 15⅝ per cent for the year (same), and a dividend of 3d. per share (25 per cent) is again paid on the deferred. Reserve receives £60,000 and £45,801 is written off goodwill, leaving £148,073 to be carried forward.

The Mersey Power Co., Ltd., reports a net revenue for 1947 of £357,727, as compared with £370,611 for 1946, which with £189,556 brought in and revenue adjustments relating to previous years of £50,225, makes £597,508 available. After meeting debenture interest, taxation, depreciation, etc., and again paying an ordinary dividend of 8 per cent, the balance carried forward is £319,335. Sales of electricity totalled 362 million kWh (against 332 million kWh).

The Mid-Cheshire Electricity Supply Co., Ltd., reports a net revenue for 1947, including dividend from the Mersey Power Co., and £3,154 in respect of 1946 adjustment, of £77,224, as compared with £86,931 for 1946. The ordinary dividend is unchanged at 8 per cent, and £13,432 is carried forward (against £17,391 brought in).

J. & F. Stone Lighting & Radio, Ltd., are again paying an interim dividend of 10 per cent.

The Oriental Telephone & Electric Co., Ltd., is paying an interim dividend of 4 per cent (unchanged).

Joseph Lucas, Ltd., are paying an interim dividend of 5 per cent (against 2½ per cent).

The St. Austell & District Electric Light & Power Co., Ltd., is paying a final dividend of 6 per cent, making 10 per cent for the year (same).

New Companies

Harmal Electrical Products, Ltd.—Registered 24th February. Capital, £1,000. Subscribers: G. C. Haret and J. Mallory. Regd. office: 27, East Parade, Leeds.

"S. & J." Electrical Co., Ltd.—Registered 26th February. Capital, £500. To carry on the business of manufacturers of, and dealers in, dynamos, motors and electrical goods, etc. Directors: F. Spittle and S. T. Jones. Regd. office: 36b, Church Hill, Loughton.

Antrim Electricity Supply Co., Ltd.—Registered in Belfast 9th March. Capital, £400,000. Directors: R. P. Baddow, 4, Wordsworth Mansions, London, W.14, R. J. Howley, R. W. Birch, A. H. M. Jacob and M. J. C. Tate.

Concord Electric, Ltd.—Registered in Dublin 15th March. Capital, £100. Manufacturers, distributors and retailers of wireless, electrical and engineering products, etc. Subscribers: Jean A. Martin, 5, Stanherne Avenue, Higher Grumpsall, Manchester, and F. M. Gully, 39-41, Dame Street, Dublin.

J. S. Plumtree & Son, Ltd.—Registered 19th March. Capital, £100. Electricians, mechanical, electrical and general engineers, etc. J. S. Plumtree, A.M.I.E.E., of Byways, Hurstbourne Tarrant, near Andover, is the first director. Solicitors: Hextall & Mudford, 27, Ely Place, E.C.1.

Sib-Bush Fluorescent & Electrical Installation Co., Ltd.—Registered 19th March. Capital, £500. Electrical contractors and installation engineers, manufacturers and repairers of, and dealers in, fluorescent lighting equipment, etc. Regd. office: Salisbury Square House, Salisbury Square, E.C.4.

John Drummond (Engineers), Ltd.—Registered in Edinburgh 27th February. Capital, £2,000. Electrical engineers, manufacturers and repairers of electrical appliances, etc. Directors: J. Drummond, P. M. Townson and J. Drummond. Secretary: J. Drummond. Regd. office: 23, Lochburn Road, Glasgow, N.W.

G. Thornton, Ltd.—Registered 24th February. Capital, £500. Electricians, electrical and radio engineers and contractors, etc. Permanent directors: G. Thornton and Joyce A. Thornton. Regd. office: 233, Brighton Road, South Croydon.

G. R. Stanton & Co., Ltd.—Registered 24th February. Capital, £1,000. To acquire the business of an electrical contractor in all its branches carried on by Geo. R. J. Stanton at 6, Brandville Gardens, Ilford, as "G. R. Stanton." Subscribers: N. D. Wood and P. A. Wood. Regd. office: 155, Aldborough Road, Seven Kings.

Maple Works, Ltd.—Registered 4th March. Capital, £4,000. Manufacturers of fuses, instruments, lamps and small electrical appliances for use in motor cars, vehicles, wagons, railways and for general and domestic purposes, etc. Directors: A. McKim and L. B. Yates. Regd. office: Maple Works, Whitton Den, Hounslow, Middlesex.

R. E. Osborne, Ltd.—Registered 8th March. Capital, £2,500. To acquire the business carried on by R. E. Osborne and to carry on the business of manufacturers of, and dealers in, electrical, wireless, television, telephone and telegraph components, etc. The directors are R. E. Osborne (chairman), S. R. Osborne,

W. T. Northcott and W. A. Northcott. Regd. office: 26, Fore Street, St. Blazey, Par, Cornwall.

XLCR Battery Co. (Oxford), Ltd.—Registered 15th March. Capital, £3,000. Manufacturers and dealers in all kinds of batteries, accumulators, etc. Directors: F. Stubbs, E. T. Smith, T. O. L. Hawthorne, J. W. Crapper and G. E. Coggins. Secretary: H. G. Muton. Regd. office: Pusey Lane, Oxford.

F. A. Orrick & Co., Ltd.—Registered 15th March. Capital, £5,000. To acquire the business of electrical engineers heretofore carried on by F. A. Orrick, E. F. Street and J. E. Baker, at 161, Bermondsey Street, S.E.1, as "F. A. Orrick & Co." Directors: F. A. Orrick (managing director), E. F. Street and J. E. Baker. Regd. office: 161, Bermondsey Street, S.E.1.

North Electrical & Refrigeration, Ltd.—Registered 6th March. Capital, £3,000. To acquire the business of electrical and refrigeration engineers and contractors carried on by A. S. North, A. H. R. Russell and E. C. Barnes as A. North, at 132, High Street, Northfleet. Directors: A. S. North, A. H. R. Russell, H. W. Foster, L. A. Cox and H. Covey. Regd. office: 177, High Street, Northfleet.

R. J. Farmer (Electrical Contractors), Ltd.—Registered 6th March. Capital, £1,500. To acquire the business of electrical engineer and contractor, part of the business formerly carried on by R. J. Farmer as R. J. Farmer & Co., at 509, Lordship Lane, Dulwich, S.E.22. Directors: R. J. Farmer (permanent director and chairman) and J. H. Ashcroft. Regd. office: 509, Lordship Lane, Dulwich, S.E.22.

B. L. Kay & Co. (Colchester), Ltd.—Registered 5th March. Capital, £6,000. To acquire the business of an electrical engineer now carried on by B. L. Kay at 23, Crouch Street, Colchester. Permanent directors: B. L. Kay (chairman), 14, Harsnett Road, Colchester, and Catherine A. Tunstall.

Ward & Williams, Ltd.—Registered 10th March. Capital, £3,500. Manufacturers and repairers of, and dealers in, electrical and mechanical apparatus and accessories and components, wireless sets, etc. Directors: A. H. Ward and A. Williams. Regd. office: 122, Lower Bents Lane, Bredbury, Ches.

Calne Electronics, Ltd.—Registered 13th March. Capital, £1,000. Electrical, radio and general engineers, etc. Directors: E. T. J. Hawkins, Mrs. Alma M. Hawkins and D. E. Nickless. Regd. office: Shelburne Road, Calne, Wilts.

Increases of Capital

Ashley Accessories, Ltd.—Capital increased by £2,500, in £1 ordinary shares, beyond the registered capital of £7,500.

Simonswood Manufacturing Co., Ltd.—Capital increased by £20,000, in £1 ordinary shares, beyond the registered capital of £20,000.

W. T. Henley's Telegraph Works Co., Ltd.—Capital increased by £500,000, in 5s. unclassified shares, beyond the registered capital of £1,500,000.

Dewhurst & Partner, Ltd.—Capital increased by £10,000, in 2s. ordinary shares, beyond the registered capital of £50,000. The original £1 ordinary shares have been subdivided into ordinary shares of 2s. each. The company has been made public.

London Electrical Co. (Blackfriars), Ltd.—Capital increased by £10,000, in £1 ordinary shares, beyond the registered capital of £37,500.

Astral Engineering Co., Ltd.—Increased by £9,900, in £1 ordinary shares, beyond the registered capital of £100.

Pontefract Electricity Co., Ltd.—Increased by £10,500, in £1 shares, beyond the registered capital of £72,000. On 20th January, 1948, the West Riding Automobile Co., Ltd., was allotted 71,998 ordinary shares.

Companies Struck Off Register

The names of the following companies have been struck off the register:—The Combi Electric Co., Ltd., Petworth Auto Electric Services, Ltd., and Progressive Electrical (Barnet), Ltd.

Liquidations

Lonsdale & Co. (Electric), Ltd.—At an extraordinary general meeting held on 11th March a resolution was passed that the company should be wound up voluntarily, and that Mr. G. McNeil, of 4, Chapel Walks, Manchester, should be appointed liquidator.

Bankruptcies

A. H. Smith, lately carrying on business at 62-64, Lower Sloane Street, London, S.W.1, electrical engineer.—The first meeting of the creditors was held at Bankruptcy Buildings, Carey Street, London, W.C.2, on 19th March, when a resolution was passed for the appointment of Mr. T. J. M. MacLeod, 4, Bucklersbury, London, E.C., as trustee of the estate.

J. H. Christopher, lately carrying on business at 54, Saville Street, and Suez Street, North Shields, electrical engineer.—First and final dividend of 1s. $7\frac{33}{64}$d. in the £, payable 2nd April at the Official Receiver's Office, Gibb Chambers, Westgate Road, Newcastle-on-Tyne.

L. C. Rowse, formerly carrying on business at 60, Lower Market Street, Penryn, Cornwall, radio and electrical engineer.—Supplemental dividend of 1s. $8\frac{1}{4}$d. in the £, payable 25th March at the Official Receiver's Office, 12, Princes Street, Truro.

J. W. Johnson, electrician, lately carrying on business at Newbridge Hill, Louth, Lincs.—Receiving order made 18th March, 1948, on debtor's petition.

STOCKS AND SHARES

APRIL 2nd is the date appointed for commencement of dealings in the new Electricity Stock issued in payment for Home electricity supply debenture stocks and preference and ordinary shares. The actual terms upon which the exchange is being made were to have been announced yesterday, 1st April.

Some time ago it was assumed, and feared, that electricity supply holders would receive a 2½ per cent stock, in the neighbourhood of 100, but later events modified this in favour of present holders and a 3 per cent stock with an attractive date of redemption became generally expected. As the price of "Transport Threes" fell away, so it grew more evident that the terms of the Electricity Stock would have to be qualified in favour of the electricity proprietors. All doubts, however, will have been resolved by the time this issue of the *Electrical Review* appears.

Gilt Edged Shares

The market in Home electricity supply shares got into something like full swing some fifty-five years ago. At first, the new industry, as everyone called it, was regarded with a certain amount of suspicion. To give some idea of the way in which shares even of the best companies, were viewed by investment, it may be mentioned that Metropolitan Electrics, in their £10 shape, fell at one time to 8½, equivalent to 17s. for the £1 share which, until Wednesday in this week, stood at 46s. 9d. By slow degrees, electricity supply shares made headway in the estimation of the investor, and the market emerged at length into the position of being one of the gilt-edged amongst Home industrials.

Dividends and Earnings

The following is a further extract from the market publication, quoted here last week, showing estimated company earnings—based on the last accounts—after deduction of profits tax at the current 25 per cent, and at a hypothetical rate of 40 per cent:—

Ordinary Shares	Earned after P.T. 25 per cent.	40 per cent.	Last Div.
Gen. Cable 5s. ..	144	113	50
Reyrolle £1 ..	16·9	13·4	12½
Br. Thermostat 5s.	40·4	30·8	23½
Crabtree 10s. ..	70	40	17½
Revo 10s. ..	81	63	27½
Walsall C. 4s. ..	109	85	70
Chloride E. £1 ..	60	48	20
M.E.M. ..	58·6	46	35

On the prices at which the above shares are on offer, yields of between 4 and 4½ per cent are shown by Reyrolle at 62s. 6d., Chloride Electrical 97s. 6d. and Midland Electric Manufacturing 8½. Crabtrees, at 40s., yield £4 7s. 6d. per cent; the earnings figures above are based on the profits of the operating subsidiary. Walsall Conduits and Revo, both at 54s., pay between 5 and 5½ per cent on the money. On British Thermostat at 24s. the yield is a fraction under 5 per cent, and on General Cables, at 42s. 6d., it is £5 18s. per cent.

Price Changes

Most of the week's changes in prices have been upward. Cable & Wireless ordinary at 187½ shows a gain of 8½ points, and British Electric Traction deferred at 1,810 is up 35. In other sections, Murex stands out with a rise of 6s. 3d. at 85s. Tube Investments are 3s. 9d. higher at 6½. Advances of 2s. 6d. lifted Johnson & Phillips to 70s., Telegraph Constructions to 49s. 6d., Hopkinsons and Chloride Electricals to the common price of 97s. 6d., and Westinghouse Brakes to 66s. 3d. In the telephone group, Automatic Telephone improved 1s. 9d. to 62s. 6d., and Ericssons 1s. 3d. to 45s. 9d. Allen Wests at 10s. 6d. and Newman Industries at 7s. have added 6d. apiece. Cossors at 14s. are above the worst but still depressed by the omission of the interim dividend.

Dividend Limitation

Vickers, Westinghouse Brake and C. A. Parsons have joined the group of important enterprises which have declared the intention to limit divdends in accordance with the policy of the F.B.I. and associated bodies. The Parsons Company has yet to publish its first accounts as a public concern. For 1946 the dividend was 12½ per cent, on the basis of which the £1 shares at 61s. 3d. yield a shilling over 4 per cent. Lancashire Dynamo full accounts show that the 22½ per cent distribution came out of earnings equal to nearly 40 per cent gross, on the £480,000 ordinary capital. On the strength of the report, the shares have risen to £5½, offering a well-covered 4½ per cent return on the money. The chairman's statement emphasizes the moderation of the dividend in relation to the employed (as opposed to the nominal) capital.

Notting Hill Electric

That the Minister of Fuel and Power is not wholly averse from listening to argument, the experience of the Notting Hill Electric Supply Co. testifies. The first value attached to the company's £10 6 per cent preference shares by the Minister was £11 15s. Representations were made to him, however, pointing out that this price was extremely low, and the Minister, having given further consideration to the question of the valuation, agreed to £13 5s. as the value of the £10 shares.

Scottish Cable Contracts

THE North of Scotland Hydro-Electric Board has placed contracts with Scottish Cables, Ltd., Renfrew, for the manufacture and installation of 33,000-V and other cables to the value of about £80,000. The cables will be installed at Aberdeen and Dundee in connection with the linking up of the Board's main generating stations.

NEW BOOKS

Developments in Electronics.

A.B.C. of Electronics. By E. B. Watton. A.M.I.E.E. Pp. 133; figs. 118. Percival Marshall & Co., Ltd., 23, Great Queen Street, London, W.C.2. Price 7s. 6d.

The term "electronics," distasteful as many find it, has now come into general use to mean the application and, to some extent also, the theoretical aspects of phenomena associated with electrons in free space as distinct from those associated with their movements in solid bodies. The subjects so embraced are many and vast, but the author has little space at his disposal; the consequent very brief treatment of the fundamentals of such devices as valves, rectifiers, photo-electric cells and cathode-ray tubes is to be expected. This occupies perhaps not more than a fifth or a quarter of the book, the major part dealing with such applications as thyratron control of welding, tension control in winding machinery, voltage regulation, safety devices, sound recording, communications, television, induction and dielectric heating, and many others. There are bound to be omissions: perhaps the greatest here is the neglect to mention discharge tubes.

The reviewer feels that the author was much more at home when describing applications than when dealing with the properties of the various devices. The style is intentionally that of a story-teller rather than of a scientist or engineer. The paper, diagrams and production generally are of good quality.—V.J.F.

Electricity Supply Meters. By A. E. B. Perrigo, A.M.I.E.E. Pp. 356; figs. 175; index. Chapman & Hall, Ltd., 37, Essex Street, London, W.C.2. Price 32s.

The first 47 pages of this book deal with the construction, underlying principles and methods of use of well-known electrical instruments. The second portion comprises 203 pages devoted to the construction, theory and methods of testing of a.c. and d.c. watt-hour meters. The theoretical treatment of the subject assumes a knowledge of elementary calculus and electrical engineering principles.

Throughout the book there is considerable emphasis of the requirements of the Electricity Supply (Meters) Act, 1936, and included in the second section there is a summary of "Approved Apparatus," but the author has rather confused this by interspersing his own views with those of the Electricity Commissioners. In this section he refers back to the testing of an electrodynamometer wattmeter by means of a d.c. potentiometer in an earlier section. On turning to it one finds that the method illustrated and described is an a.c. test which is not in accordance with the technique laid down by the Commissioners. The statement in the early part of the book that the potentiometer is used only for current measurements is inaccurate.

Meter Theory and Practice.

In several instances the author has missed some important practical point while taking great pains to prove his arguments from theoretical considerations. Thus in dealing with summation by paralleled current transformers he indicates that such a scheme can be extended to any number of feeders, but does not mention that the current rating of the meter should be equivalent to the summated secondary currents of the current transformers.

It is a pity that the book does not include reference to some of the important developments in metering technique which have taken place in the last seven years. The thermionic voltage stabilizer as applied to potentiometer standardizing, apparatus for re-surfacing meter jewels and developments in magnetic materials are all worthy of inclusion. The first chapter, dealing with units and definitions, now requires correction for the "international" system of units.

While there is little new material in this book, it should prove useful to the more junior engineers engaged in supply undertakings' meter departments. For the engineer or experimentalist who uses instruments in his investigations, the major portion of the book will be of little interest.—H.A.

Electrical Materials. Edited by E. Molloy. Pp. 111; figs. and index. George Newnes, Ltd., Tower House, Southampton Street, London, W.C.2. Price 5s.

This book deals in handy form with the characteristics, composition, properties, tests and uses of materials of significance in the electrical industry for magnetic, conducting and insulating purposes. The rarer and precious metals, by themselves or in combination with others, of sintered compound materials, and the alloying of copper and aluminium have been given full consideration in the first four chapters. The consideration of insulating materials is a very different story, so the extensive data given in this small book will prove of the greatest value to all concerned with their selection. Gaseous and liquid dielectrics, semi-fluids and fusible materials, varnishes, enamels, paints and lacquers, synthetic substances and fibrous glass are all adequately dealt with.

The value of the book is enhanced by the inclusion of all necessary references to British Standard Specifications and to other sources of information and the reviewer can thoroughly recommend it.—T.C.G.

Books Received

Television Receiver Construction. Pp. 48; figs. 58. Iliffe & Sons, Ltd., for *Wireless World*.

This reprint of ten articles which have appeared in *Wireless World* contains a full description of a modern television receiver.

The information given is sufficient to enable anyone with some experience of wireless equipment to construct the receiver.

Know Your Car. By the Technical Staff of *The Autocar*. (3rd Edition.) Pp. 102; figs. 120. Iliffe & Sons, Ltd. Price 2s. 6d.

Newnes Plastics Manual. By F. J. Camm, H. W. Gilbert-Rolfe and D. C. Nicholas (2nd Edition). Pp. 242; figs. 115; index. George Newnes, Ltd. Price 17s. 6d.

Electricity Meters and Meter Testing.—By G. W. Stubbings, B.Sc., F.Inst.P., A.M.I.E.E., (2nd Edition). Pp. 220; figs. 62; index. Chapman & Hall, Ltd. Price 16s.

Electronic Circuits and Tubes. By the war training staff of the Cruft Laboratory, Harvard University. Pp. 948; figs. and index. McGraw-Hill Publishing Co., Ltd., Aldwych House, Aldwych, London, W.C.2. Price 45s.

Troubles of Electrical Equipment. By H. E. Stafford. (3rd Edition.) Pp. 455; figs. 364; index. McGraw-Hill Publishing Co. Ltd. Price 27s.

Canadian Water Power

Large Schemes under Construction

THE annual review of Canadian water-power development issued by the Dominion Water and Power Bureau, Department of Mines and Resources, emphasizes the growing demand for hydro-electric energy and the great programme of construction now under way or planned. During 1947 the demand for primary power expanded in practically all districts and is now nearly 90 per cent above the 1939 level. As power producing agencies had generally expected some falling off in industrial activity in early post-war years, little construction was undertaken during 1945 and 1946; thus, the heavy demand is resulting in shortages of power in some areas, and in the re-imposition of restrictive measures on power use, pending completion of new plants.

Installations brought into operation during the year aggregated 178,800 h.p.; plants now under construction are expected to add about 500,000 h.p. this year, and preliminary investigation, plans and construction activities may be said to cover water power sites having a total estimated capacity of about 2,000,000 h.p.

Ontario.—The largest single addition to the generating capacity of the country during the year was that by the Hydro-Electric Power Commission of Ontario with its new 70,000-h.p. unit at DeCew Falls, near St. Catharines. At Stewartville, on the Madawaska River, 81,000 h.p. in three units is expected to be placed in operation next autumn, as also is the Aguasabon plant (53,500 h.p.) on the north shore of Lake Superior, near Schreiber. On the Ottawa River, construction of the Des Joachims development progressed satisfactorily. It is anticipated that two 60,000-h.p. units will be in service towards the end of 1950 and additional units at intervals of two months thereafter. A new major power project on the Ottawa River is that at the Chenaux Rapids site, some 15 miles from Renfrew, with an ultimate capacity of 160,000 h.p. under a head of 40 ft (12 m). In northern Ontario, preliminary work started at Pine Portage (Nipigon River) where an initial capacity of 80,000 h.p. is planned in two units under a head of 105 ft (32 m). A second major development in northern Ontario was begun at the Tunnel power site on the Mississagi River. The scheme provides for a dam 240 ft (73 m) high, two 29,000-h.p. turbines being operated under a head of 210 ft (64 m).

Quebec.— The Shawinigan Water & Power Co.'s new 195,000-h.p. development at Shawinigan Falls, St. Maurice River, is scheduled for commercial operation late this year. In addition, the company has long-range plans under consideration for the development of about 350,000 h.p. at La Trenche Rapids on the same river.

The Gatineau Power Co. completed the installation of the fifth and final unit of 24,000 h.p. in its Farmers Rapids plant on the Gatineau River.

At Beauharnois the Quebec Hydro-Electric Commission, through its subsidiary the Beauharnois Light, Heat & Power Co., expects to put into operation this year a fourteenth 50,000-h.p. unit, thus completing the No. 1 power-house. For power-house No. 2 present plans contemplate the installation of two units of 50,000 h.p. by 1951 and two additional units in 1952. At the Quebec Government's Rapid VII plant on the Ottawa River the installation of a fourth unit of 16,000 h.p. is under way.

British Columbia.—The British Columbia Power Commission's major undertaking is the construction of the Campbell River plant, Vancouver Island, the first 28,000-h.p. unit of which came into operation late in the year; construction work is proceeding on a second unit of the same size, and a contract has been let for the third and fourth units with completion scheduled for 1949.

The first 62,000-h.p. unit of the British Columbia Electric Railway Company's project on the Bridge River is expected to be in operation in October and a second unit has been ordered.

Manitoba.—In the Slave Falls power-house, Winnipeg River, the Winnipeg Hydro-Electric System brought into operation in 1947 a seventh 12,000-h.p. unit; the eighth and final unit is expected to be completed this year.

CONTRACT INFORMATION

Accepted Tenders and Prospective Electrical Work

Contracts Open

Where "Contracts Open" are advertised in our "Official Notices" section the date of the issue is given in parentheses.

Australia.—15th July. City Electric Light Co., Brisbane. 33-kV indoor metalclad switchgear.*

Egypt.—15th June. Ministry of Public Works. 25,000-kW power plant and auxiliaries for Talkha, North Eastern Delta.*

Kesteven.—30th April. County Council. Electrical work at Caythorpe Court. (See this issue.)

Manchester.—15th April. No. 1 Sub-Area, North-Western Electricity Board. Cables, cut-outs and service units for twelve months from 30th June next. (See this issue.)

Salford.—19th April. Electricity Department. Electrical installation at North Salford Secondary Modern School. (See this issue.)

Scotland.—25th May. North of Scotland Hydro-Electric Board. Construction and maintenance of the Errochty tunnel and power station, Perthshire. Particulars from Sir Alex. Gibb & Partners, 43, Northumberland Street, Edinburgh, 3 (deposit £10); tenders to be sent to the secretary of the Board, 16, Rothesay Terrace, Edinburgh, 3.

Supply, delivery and erection of about 60 miles of 132-kV wood pole transmission lines. Particulars from Merz & McLellan, 39, Northumberland Street, Edinburgh, 3 (deposit £2 2s.).

South Africa.—2nd June. Capetown Electricity Department. Metalclad service cut-outs.*

30th June. Pretoria City Council. Coal-handing plant. (See this issue.)

---

* Specifications may be inspected at the Export Promotion Department, Thames House North, Millbank, S.W.1.

Orders Placed

Farnworth.—Electricity Committee. Recommended. E.h.v. switchgear (£3,689).—Crompton Parkinson. L.v. distribution boards.—English Electric Co. (526); G. P. Dennis (£320). Paper insulated cables (£8,241).—Aberdare Cables. Earthenware pipes and cable tiles (£228).—H. J. Baldwin.

Stoke Newington.—Borough Council. Recommended. 750-kVA indoor transformer for the Somerfield Road kiosk (£965) and 750-kVA outdoor transformers for the Portland Rise kiosk and Woodberry Down estate (£989 each).—Transformers & Welders.

Wimbledon.—Accepted. 11-kV A switchboard extensions (£8,892) and four current transformer chambers (£1,030 plus erection cost).—A. Reyrolle & Co., Ltd. Two 15-MVA, 33/11-kV transformers (£28,110).—Hackbridge & Hewittic Electric Co., Ltd.

Contracts in Prospect

Particulars of new works and building schemes for the use of electrical installation contractors and traders. Publication in this section is no guarantee that electrical work is definitely included. Alleged inaccuracies should be reported to the Editors.

Ancoats.—Extensions to works, Jersey Street, for Hill & Son (Manchester), Ltd.; P. Hamer, Ltd., builders, Park Street, Swinton.

Aycliffe (Co. Durham).—Factory on trading estate for Duralum Castings, Ltd.; North-Eastern Trading Estates, Ltd., Low Fell, Gateshead.

Barking.—Houses (73), in nine blocks, Mayesbrook Park estate; C. C. Shaw, borough architect, Town Hall.

Barrow-in-Furness.—Houses (124), Newbarns estate; J. N. Flitcroft, borough engineer, Town Hall.

Bedlington.—Pithead baths at the "A" pit for the Miners' Welfare Commission; F. G. Frizzell, Commission's Divisional Architect, 5, Saville Place, Newcastle-on-Tyne.

Bermondsey.—Rebuilding factory for George Payne & Co., Ltd.; G. W. Smith, architect, New Square, Lincoln's Inn, W.C.2.

Billinge & Winstanley.—Houses (150), Claremont site, for U.D.C.; J. M. Wilson & Sons, architects, Midland Bank Buildings, St. Helens.

Blackley.—Extensions to Central Mills, Chapel Lane, for Wallpaper Manufacturers, Ltd.; B. Waterhouse, architect, 134, Deansgate, Manchester.

Border.—Houses (20), Parkhead site; R.D.C. surveyor.

Bredbury.—Primary school, Yew Tree Farm site; E. M. Parkes, Cheshire county architect, The Castle, Chester.

Broughton.—Rebuilding factory, Lower Broughton Road, for J. Lee & Co. (Leeprufe), Ltd.; C. Wild, architect, 72, Bridge Street, Manchester, 3.

Burnley.—High school for girls, Ivy Bank; borough engineer.

Burradon (Northumberland).—Pithead baths at Burradon Colliery (£71,000); Gordon Durham & Co., Ltd., builders, East Boldon, Co. Durham.

Dartford.—Houses (40), Temple Hill estate; borough surveyor, Town Hall.

Denton.—Houses (44), St. Lawrence Road and Lees House Farm estate, for U.D.C.; Egerton Construction Co., Ltd., builders, St. Lawrence Road.

Dover.—Permanent houses (40), Buckland Valley and Green Lane Farm estates; borough engineer, Maison Dieu House.

Glasgow.—Flour mill and silos, Castlebank Street; Scottish Co-operative Wholesale Society, Ltd., 95, Morrison Street.

Hanham (Glos.).—Cinema, for Gaumont British Picture Corporation; W. E. Trent, architect to the company, Regent Street, W.1.

Hartlepool.—Houses (50); borough engineer, Borough Buildings, Hartlepool.

Hebburn.—Houses (38) in Lambley Crescent for the U.D.C.; D. Glen, builder, Back Queens Road, Jarrow-on-Tyne.

Hereford.—New grading station for West Midland Egg Packers, Ltd., Holme Street; Scriven, Powell & James, architects, Cathedral Chambers, King Street.

Nine blocks of " Duplex " houses, Hunderton estate; T. B. Feltham, town clerk, Town Hall.

Heywood.—Central bus station, Wood Street; A. Middleton, borough surveyor, Municipal Offices.

Hull.—Permanent houses (100); borough engineer.

Lichfield.—Factory, Trent Valley estate, for Bound Brook Bearings (G.B.), Ltd., Birch Road, Birmingham; Hing & Jones, architects, 121, Colmore Row, Birmingham.

London. — PADDINGTON. — Modernization scheme at St. Mary's Hospital, Praed Street; Young & Hall, architects, 9, Southampton Row, W.C.1.

Manchester.—Extensions to works for J. A. Turner & Co., Ltd., Nutsford Vale; H. S. Fairhurst & Son, architects, 55, Brown Street.

Middlesbrough. — Houses (64), Thorntree estate. Builders: Hudson Brothers, Fidler Street (34), and R. H. Bailey & Son, Denmark Street, Middlesbrough (30).

Newcastle-on-Tyne.—Offices for the Newcastle Model Milk Co., Sutton Street, J. Anderson, 4, Mosley Street.

Northumberland.—Pithead baths at Blackhill Colliery for the Miners' Welfare Commission; F. G. Frizzell, Divisional Architect, Saville Place, Newcastle-on-Tyne.

Radcliffe.—Switch house at paper mills; East Lancashire Paper Mill Co., Ltd.

Sheffield.—New block at Nether Edge Hospital (£35,200); city engineer.

Southwell. — Adaptation of Brackenhurst Hall, as an agricultural institute (£81,000); county architect, Shire Hall, Nottingham.

Stafford.—R.C. primary school, New Garden Street; Canon B. Moore, St. Austin's Church.

Staffordshire.—Police houses (140); county architect, County Buildings, Stafford.

Stevenage.—Houses (24), Grey Dells Road; G. V. Berry, clerk, Council Offices.

Stockport.—Houses (28), Sterndale Road; F. Marsland, builder, 7, Bullock Street.

Swindon.—Grammar school, Cricklade Road, for Wilts C.C.; county architect, Trowbridge.

Tottenham.—Extensions at Prince of Wales Hospital (£33,000); Easton & Robertson, architects, 54, Bedford Square, W.C.1.

Trafford Park.—Extensions to Anaconda Works, Trafford Park Road; Frederick Smith & Co., St. Simon Street, Salford, 3.

Tynemouth.—Flats at the junction of Hylton Street and Henry Street, North Shields; borough engineer, 19, Howard Street, North Shields.

Urmston.—Pump houses at Chemical Works, Tenax Road, Trafford Park for Geigy Co., Ltd., B. Waterhouse architect, 134, Deansgate, Manchester.

Wallasey.—Ringham Lane county primary school; H.G.B. Construction Co., Ltd., Super Buildings, Hoylake Road, Moreton.

Warwickshire.—Additional wing at Alcester Grammar School; county architect, Shire Hall, Warwick.

Weardale.—Houses for key workers; R.D.C. surveyor, Council Offices, Stanhope, Co. Durham.

Winsford.—Permanent houses (70), Dene estate; Peter Heaton, U.D.C. surveyor, Council Offices, Winsford, Cheshire.

Worcester.—Houses (56), Newtown No. 2 estate; city engineer, 22, Bridge Street.

Workington.—Extensions to factory and works canteen, Northside Lambskin Refining Co.; West Cumberland Industrial Development Council, 30, Roper Street, Whitehaven.

Factory Sound Reproducing Equipment

IT is said that more than half the public address business is done with factories, which purchase sound reproducing equipment (SRE) for staff location, making announcements and furnishing " music while you work," yet very little of this business is secured by retailers despite their knowledge of local needs. To enable dealers (radio and electrical, including electrical contractors) to participate in this business without any financial commitment, Philips Electrical, Ltd., is to launch a nation-wide scheme through the trade as from the 1st May next whereby the Modern Telephone Co., Ltd., undertakes to distribute Philips' SRE equipment on a rental-maintenance basis alternatively to sale outright. The dealer has merely to introduce prospective users; he will receive a share of all rentals and in addition will be paid separately for any installation work he may be asked to do.